594-C-47 FEM 1.209:530024/ v.2

FLOOD INSURANCE STUDY

CLARK COUNTY, WASHINGTON
UNINCORPORATED AREAS

VOLUME 2 OF 2

Ga/CD

REVISED: OCTOBER 16, 1987

Federal Emergency Management Agency

COMMUNITY NUMBER-530024

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

This publication incorporates revisions to the original Flood Insurance Study. These revisions are presented in Section 9.0.

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
	1.1 Purpose of Study	1
	1.2 Authority and Acknowledgments	1
	1.3 Coordination	1
2.0	AREA STUDIED	2
	2.1 Scope of Study	2
	2.2 Community Description	2
	2.3 Principal Flood Problems	7
	2.4 Flood Protection Measures	8
3.0	ENGINEERING METHODS	17
	3.1 Hydrologic Analyses	17
	3.2 Hydraulic Analyses	19
4.0	FLOOD PLAIN MANAGEMENT APPLICATIONS	24
	4.1 Flood Boundaries	24
	4.2 Floodways	25
5.0	INSURANCE APPLICATION	41
	5.1 Reach Determinations	41
	5.2 Flood Hazard Factors	42
	5.3 Flood Insurance Zones	42
	5.4 Flood Insurance Rate Map Description	46
6.0	OTHER STUDIES	46
7.0	LOCATION OF DATA	47
8.0	BIBLIOGRAPHY AND REFERENCES	47
9.0	REVISIONS DESCRIPTIONS	51
	9.1 First Revision	51

TABLE OF CONTENTS--VOLUME 1 (cont.)

Page

FIGURES

Figure 1 - Vicinity Map 3
Figure 2 - Historic Flooding 9
Figure 3 - Historic Flooding 10
Figure 4 - Historic Flooding 11
Figure 5 - Historic Flooding 12
Figure 6 - Historic Flooding 13
Figure 7 - Historic Flooding 14
Figure 8 - Floodway Schematic 41

TABLES

Table 1 - Summary of Flooding Sources 4
Table 2 - Comparison of Major Columbia River Floods 15
Table 3 - Summary of Discharges 20
Table 4 - Channel Roughness Factors 23
Table 5 - Floodway Data 26
Table 6 - Flood Insurance Zone Data 43

TABLE OF CONTENTS--VOLUME 2

EXHIBITS

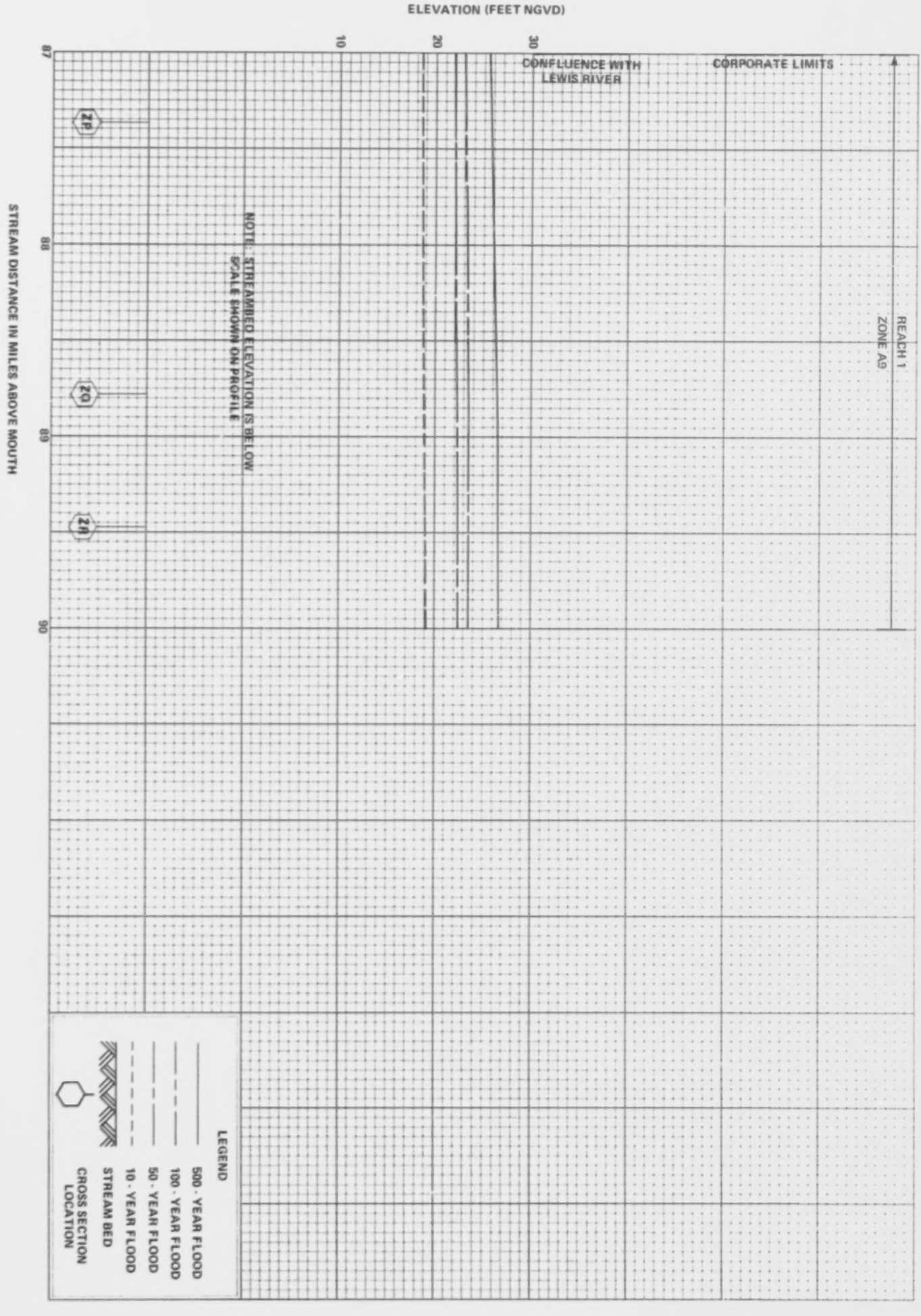
Exhibit 1 - Flood Profiles

Columbia River	Panels 01P-08P
Lewis River	Panels 09P-23P
East Fork Lewis Fork	Panels 24P-34P
Gee Creek	Panels 35P-36P
Unnamed Tributary to Gee Creek	Panel 37P
Salmon Creek	Panels 38P-49P
Mill Creek	Panels 50P-54P
Weaver Creek	Panel 55P
Burnt Bridge Creek	Panels 56P-62P
Washougal River	Panels 63P-65P

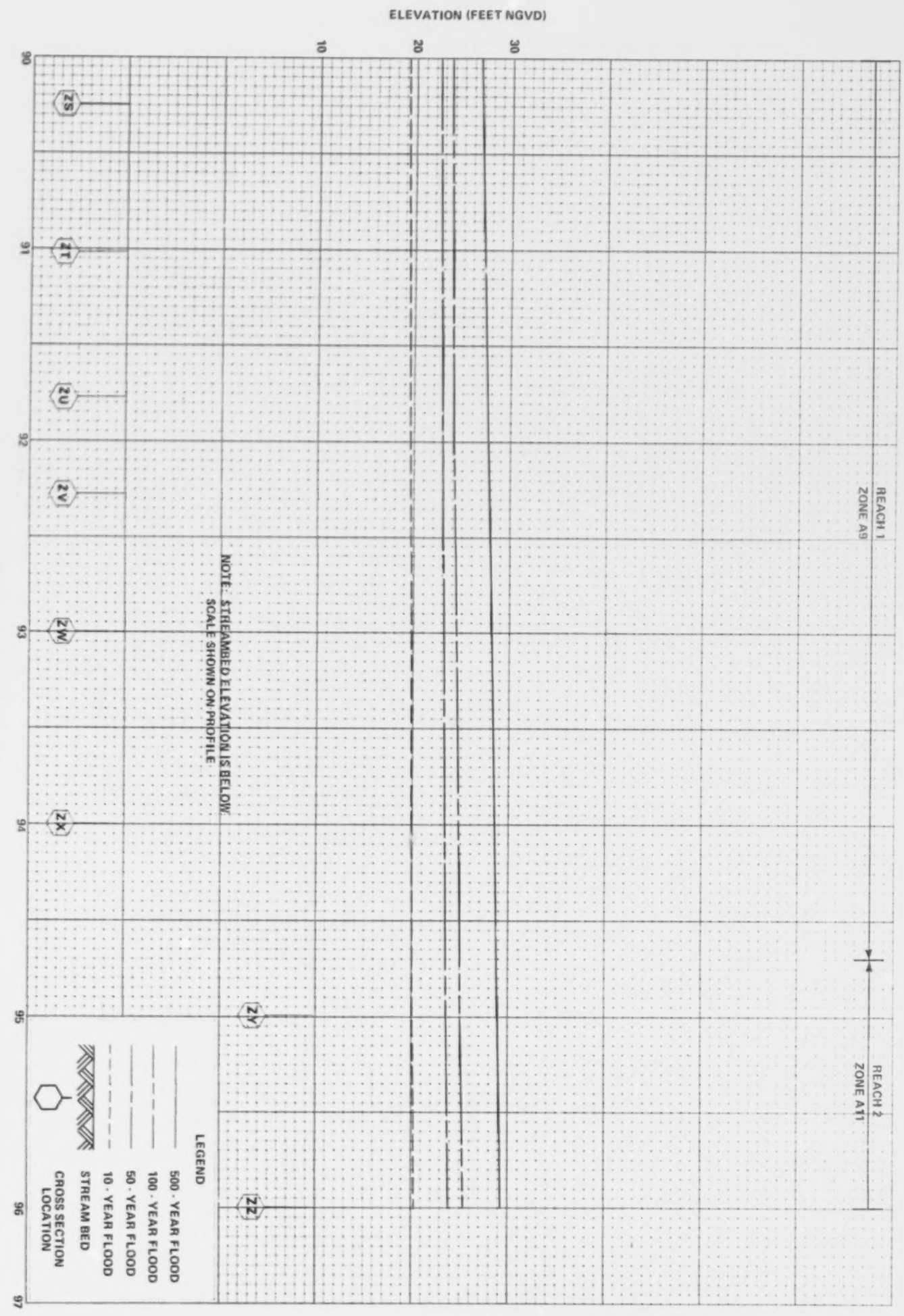
Exhibit 2 - Flood Boundary and Floodway Map Index
Flood Boundary and Floodway Map

PUBLISHED SEPARATELY

Flood Insurance Rate Map Index
Flood Insurance Rate Map



01P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES COLUMBIA RIVER



02P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

COLUMBIA RIVER

FLOOD PROFILES

COLUMBIA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

03P

REACH 2
ZONE A11

REACH 3
ZONE A12

CORPORATE LIMITS
CITY OF VANCOUVER

CITY OF VANCOUVER
CORPORATE LIMITS

ELEVATION (FEET NGVD)

35
30
25
20

NOTE: STREAMBED ELEVATION IS BELOW SCALE SHOWN ON PROFILE

NOTE: STREAMBED ELEVATION IS BELOW SCALE SHOWN ON PROFILE

F

G

LEGEND

- 500 - YEAR FLOOD
- 100 - YEAR FLOOD
- 50 - YEAR FLOOD
- 10 - YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

101.2 101.6 102.0 102.4 102.8 103.2 103.6 104.0 104.4 110.2 110.6 111.0 111.4 111.8

STREAM DISTANCE IN MILES ABOVE MOUTH

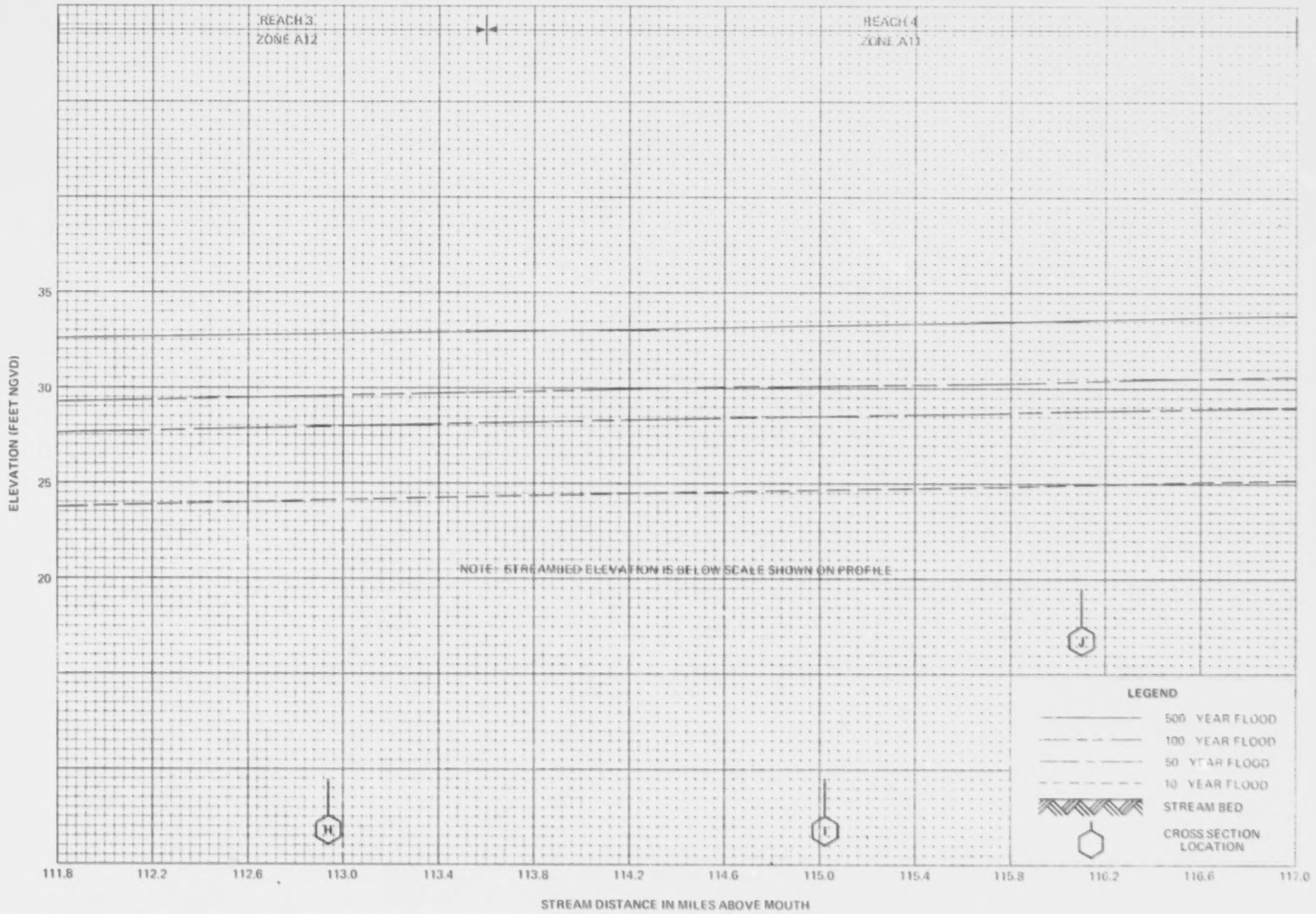
FLOOD PROFILES

COLUMBIA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

04P



FLOOD PROFILES

COLUMBIA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

05P

REACH 4
ZONE A11

REACH 5
ZONE A10

CONFLUENCE WITH
WASHOUGAL RIVER

ELEVATION (FEET NGVD)

40
35
30
25

NOTE: STREAMBED ELEVATION IS BELOW SCALE SHOWN ON PROFILE

K
L
M

LEGEND

500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

117.0 117.4 117.8 118.2 118.6 119.0 119.4 119.8 120.2 120.6 121.0 121.4 121.8 122.2

STREAM DISTANCE IN MILES ABOVE MOUTH

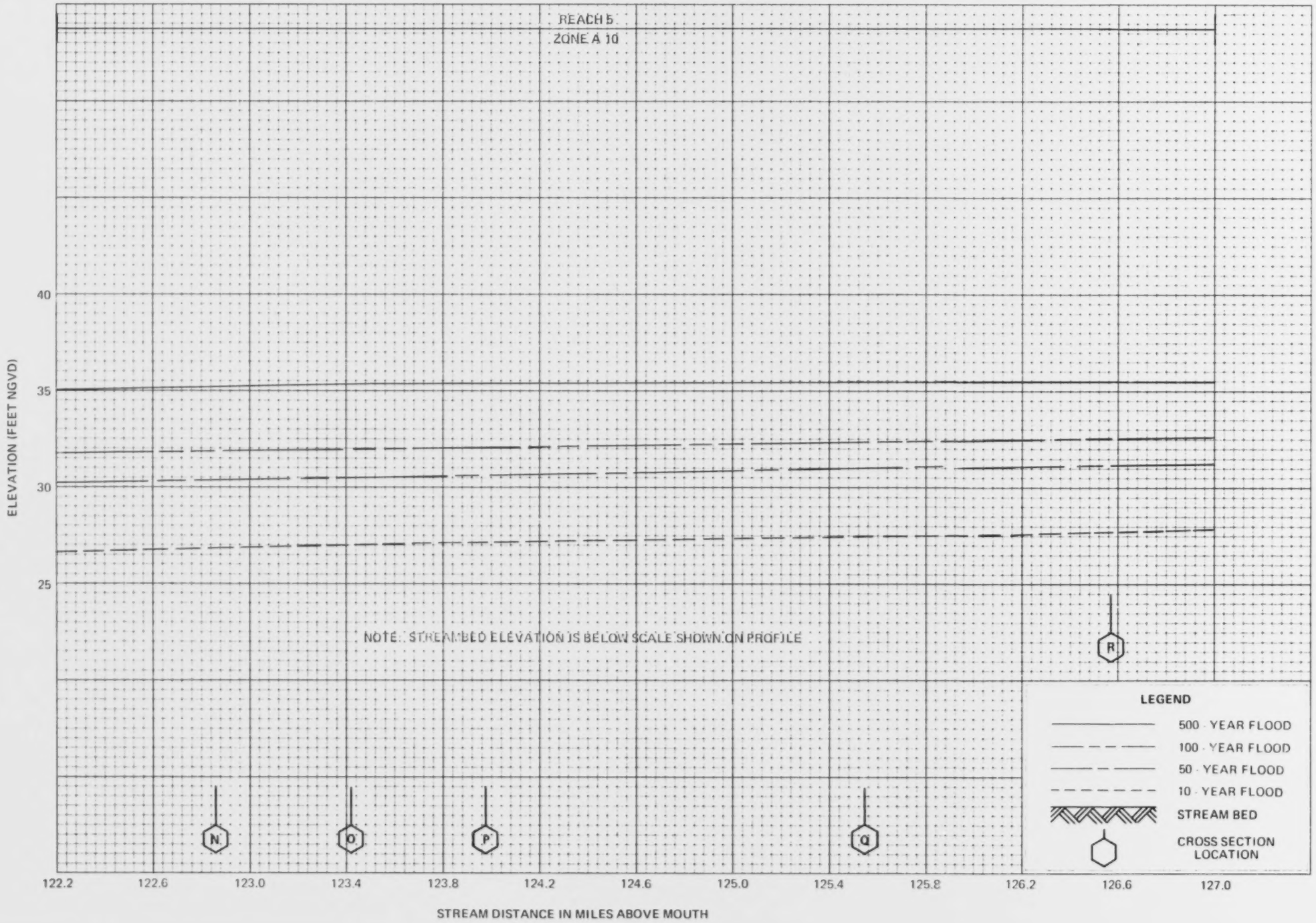
FLOOD PROFILES

COLUMBIA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

06P



FLOOD PROFILES

COLUMBIA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

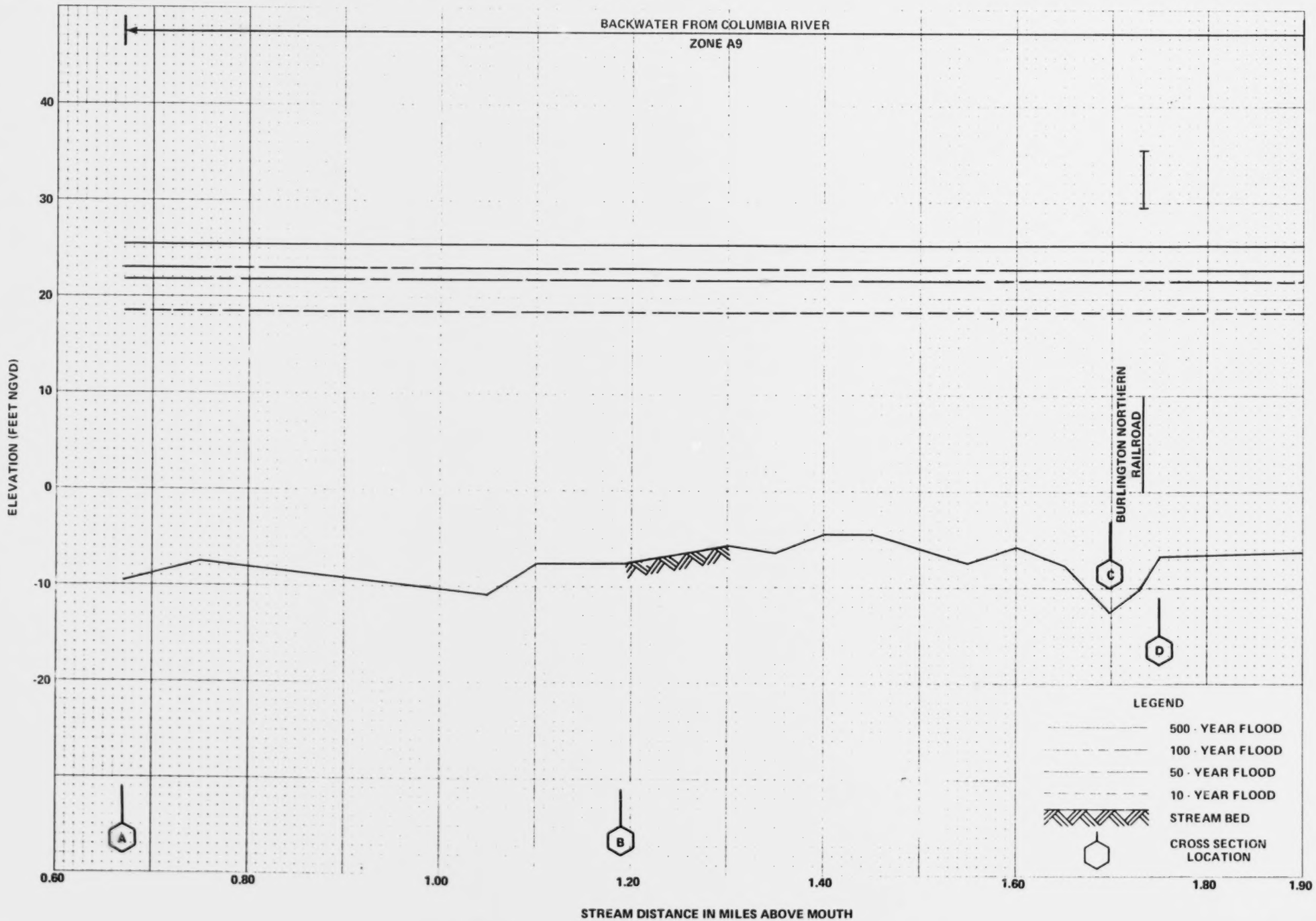
07P

FLOOD PROFILES

COLUMBIA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)



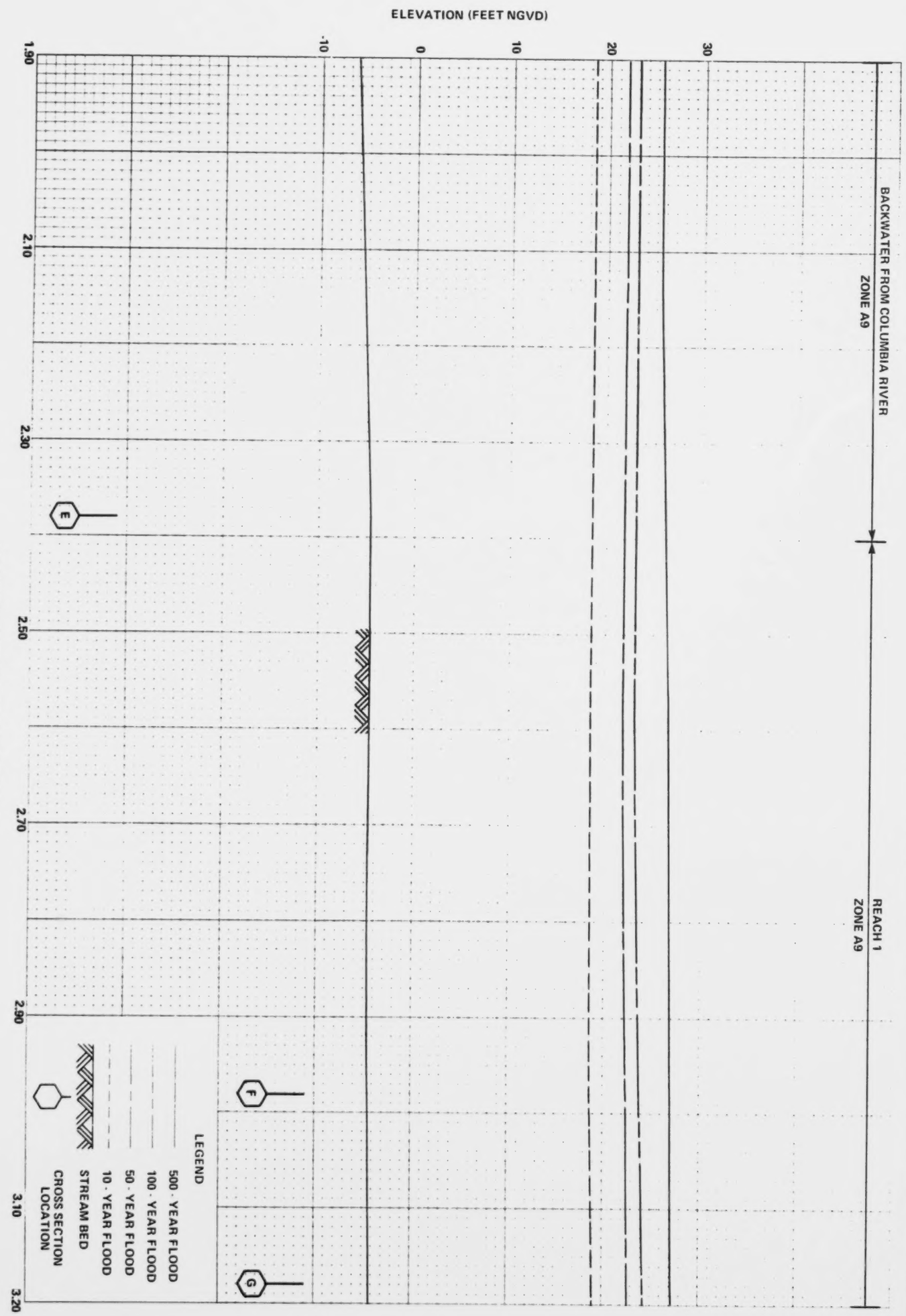
FLOOD PROFILES

LEWIS RIVER

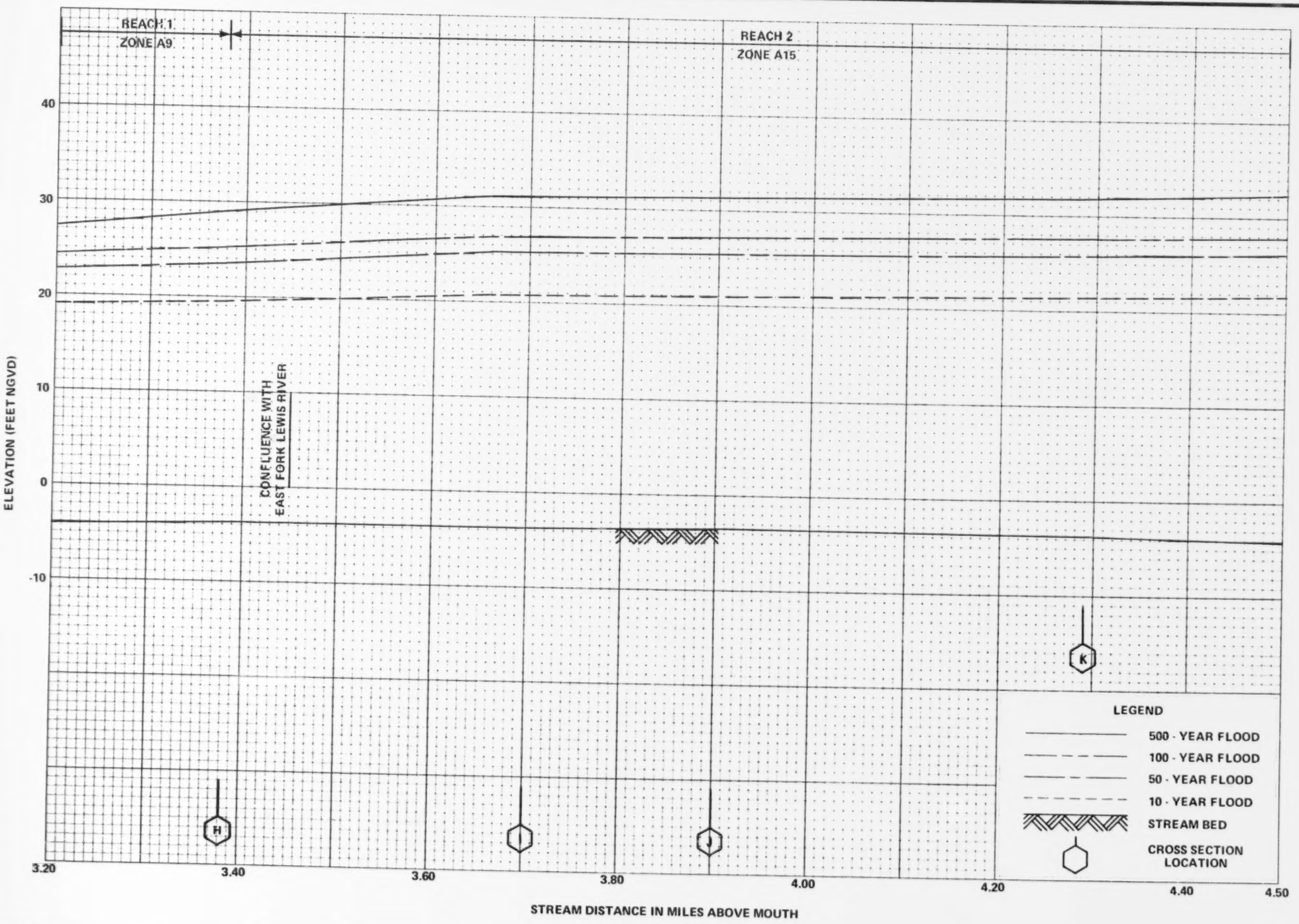
FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

09P



10P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES LEWIS RIVER

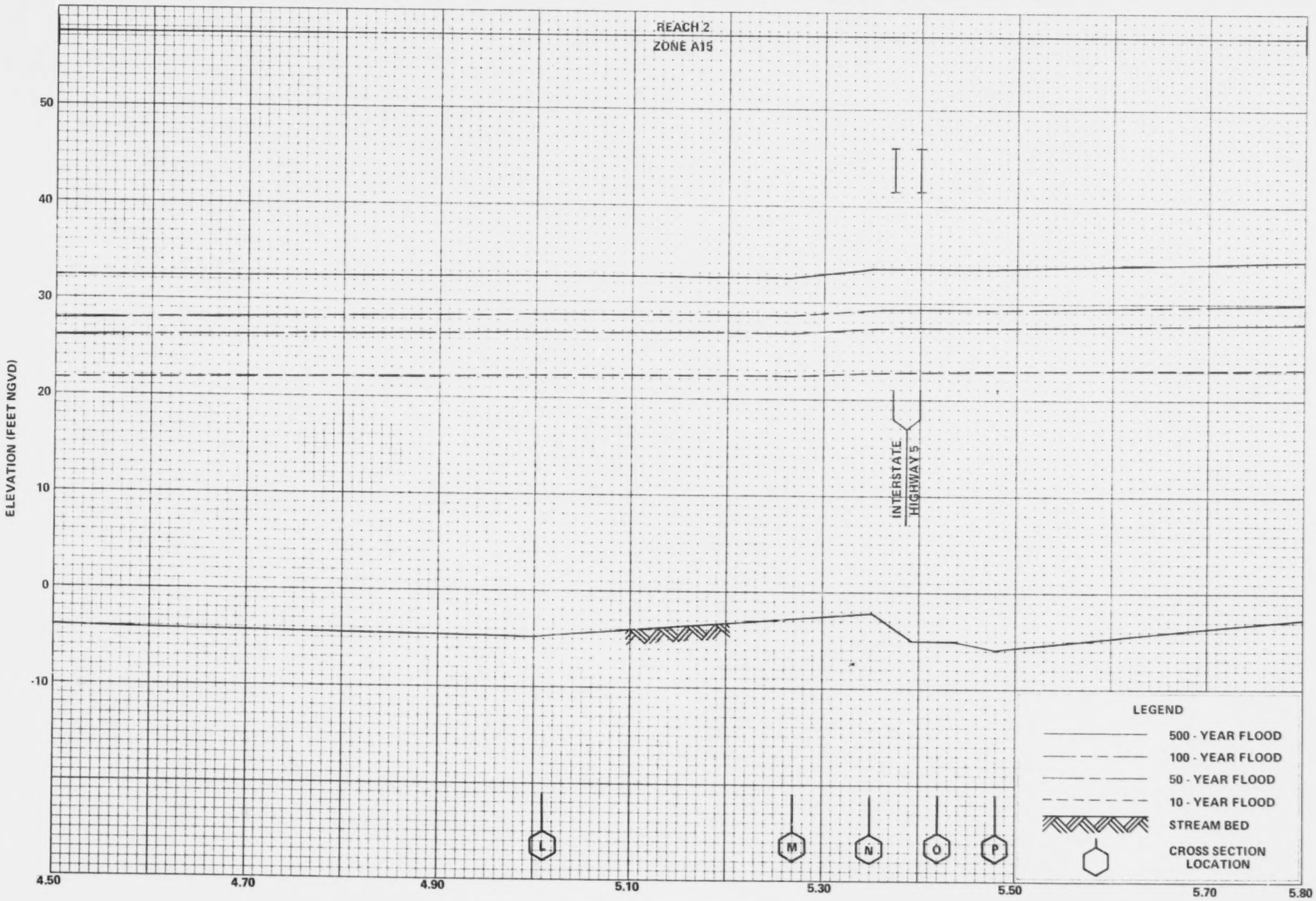


FLOOD PROFILES

LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)



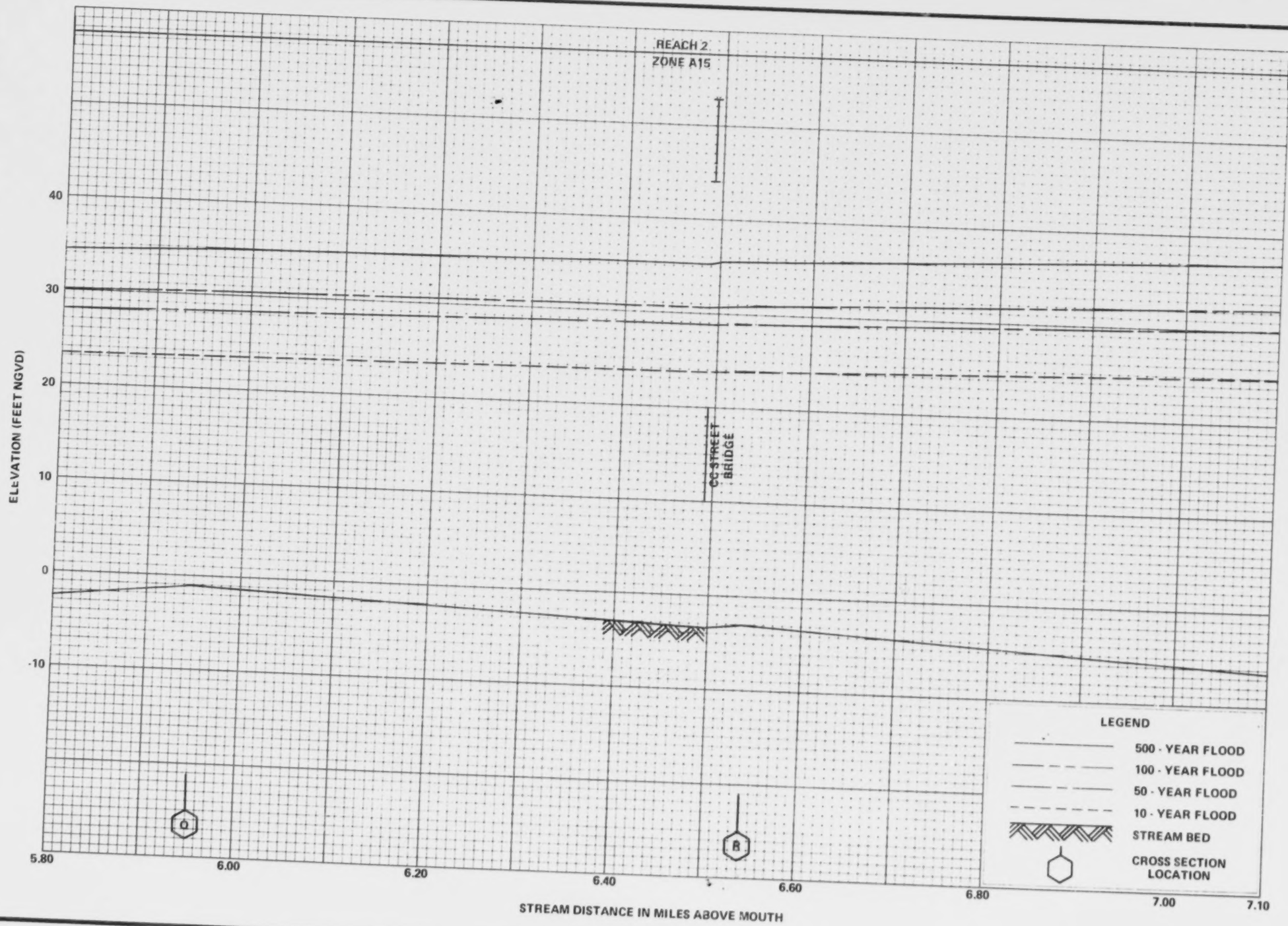
FLOOD PROFILES

LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

12P



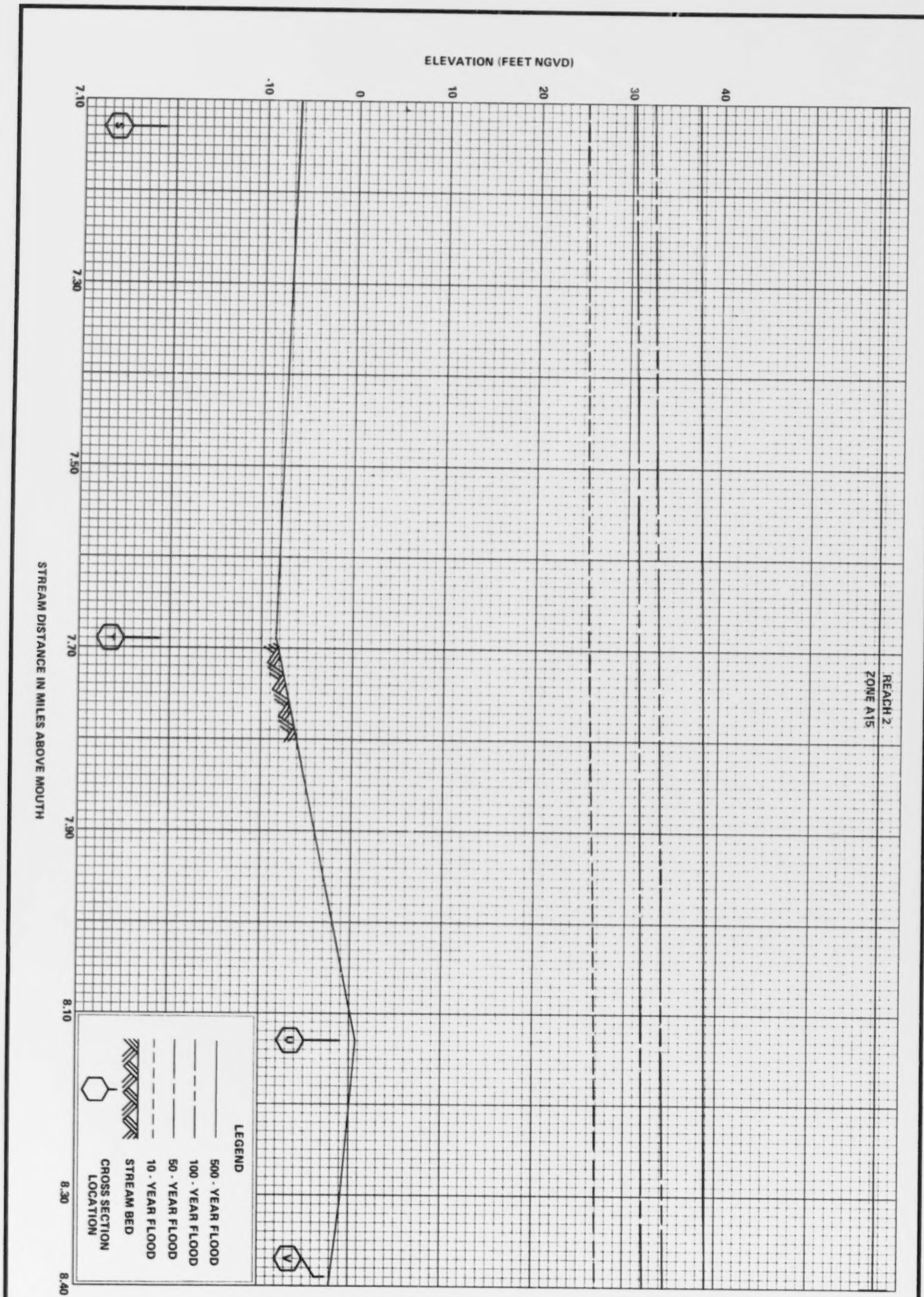
FLOOD PROFILES

LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

13P



14P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES LEWIS RIVER

REACH 2
ZONE A15

ELEVATION (FEET NGVD)

50
40
30
20
10
0
-10

8.40
8.60
8.80
9.00
9.20
9.40
9.60
9.70

STREAM DISTANCE IN MILES ABOVE MOUTH

W
X

LEGEND

- 500 - YEAR FLOOD
- 100 - YEAR FLOOD
- 50 - YEAR FLOOD
- 10 - YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

15P

REACH 2
ZONE A15

ELEVATION (FEET NGVD)

50
40
30
20
10
0

9.70 9.90 10.10 10.30 10.50 10.70 10.90 11.00

STREAM DISTANCE IN MILES ABOVE MOUTH

LEGEND

- 500 - YEAR FLOOD
- 100 - YEAR FLOOD
- 50 - YEAR FLOOD
- 10 - YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

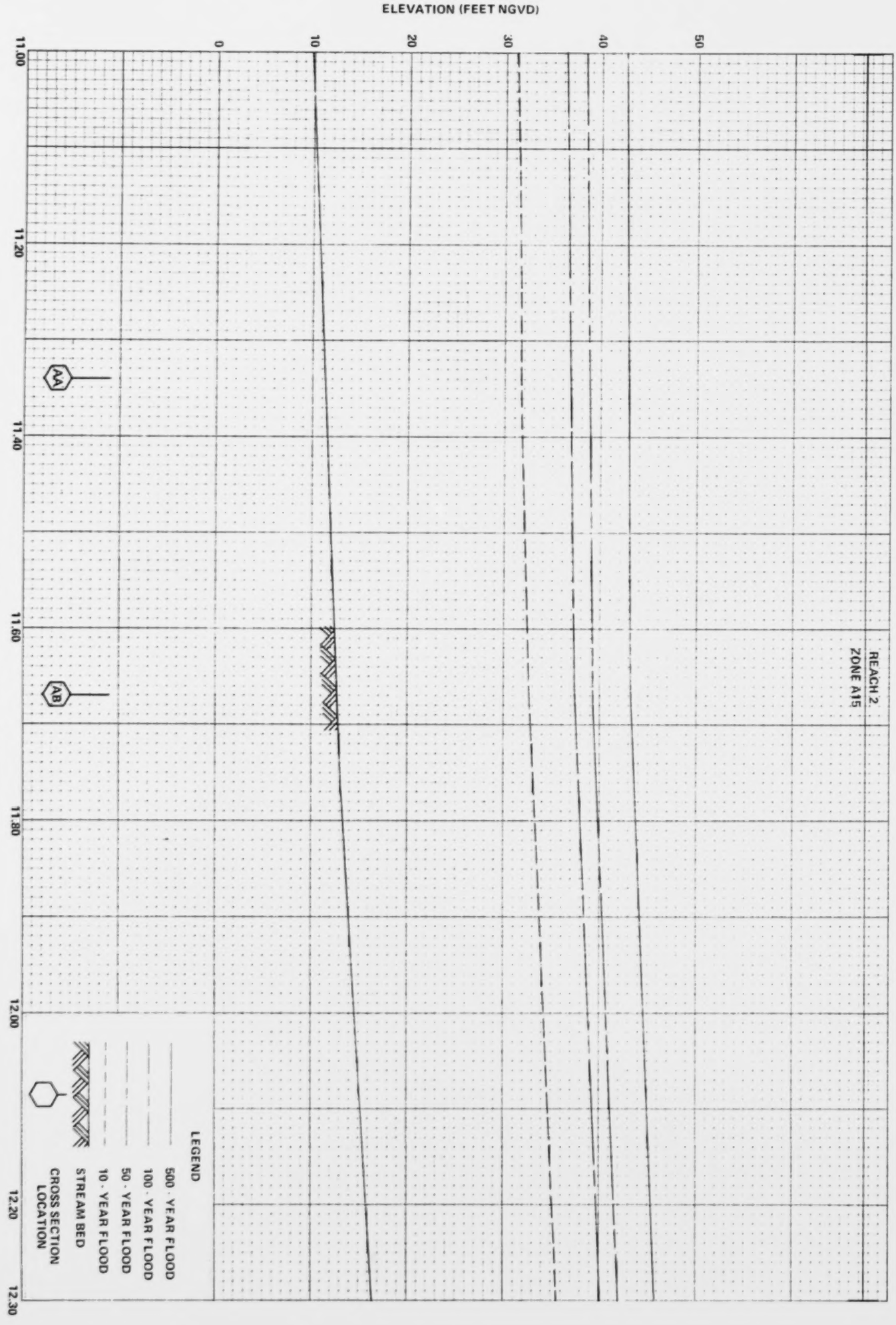
FLOOD PROFILES

LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

16P



17P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES LEWIS RIVER

REACH 2
ZONE A15

ELEVATION (FEET NGVD)

60
50
40
30
20
10

12.30 12.50 12.70 12.90 13.10 13.30 13.50 13.60

STREAM DISTANCE IN MILES ABOVE MOUTH

AC AD AE

LEGEND

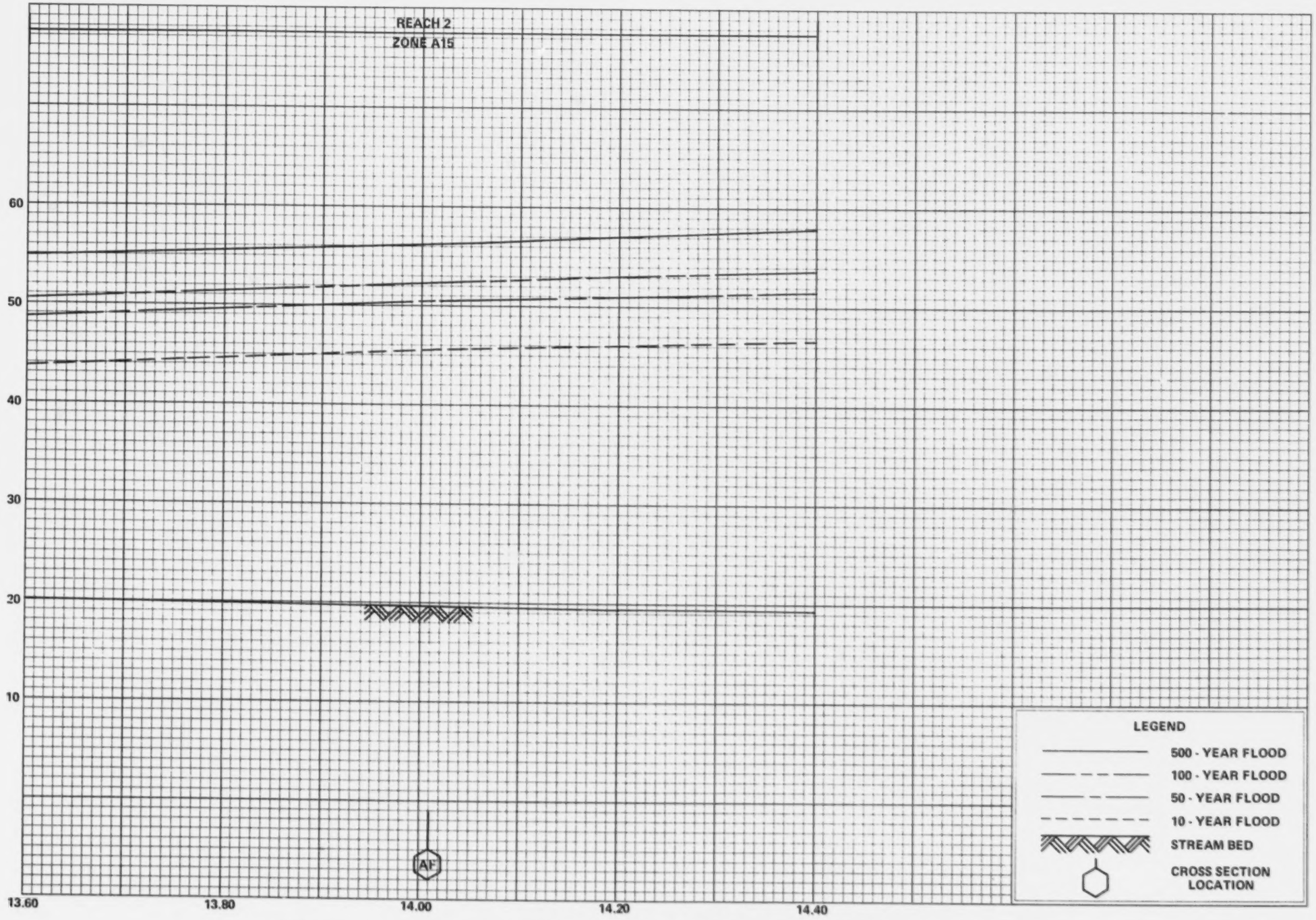
500 - YEAR FLOOD
100 - YEAR FLOOD
50 - YEAR FLOOD
10 - YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

FLOOD PROFILES

LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

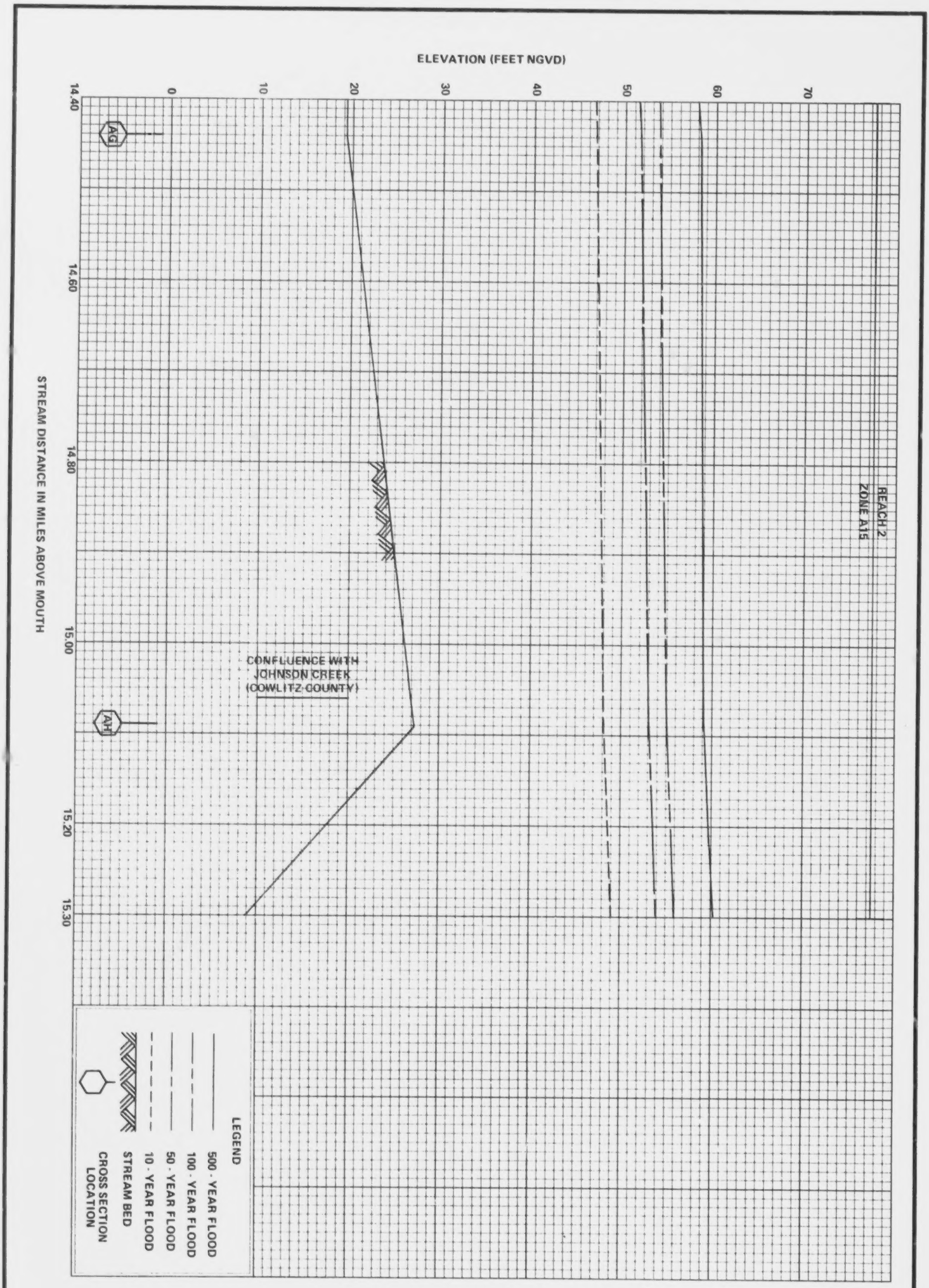


FLOOD PROFILES

LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

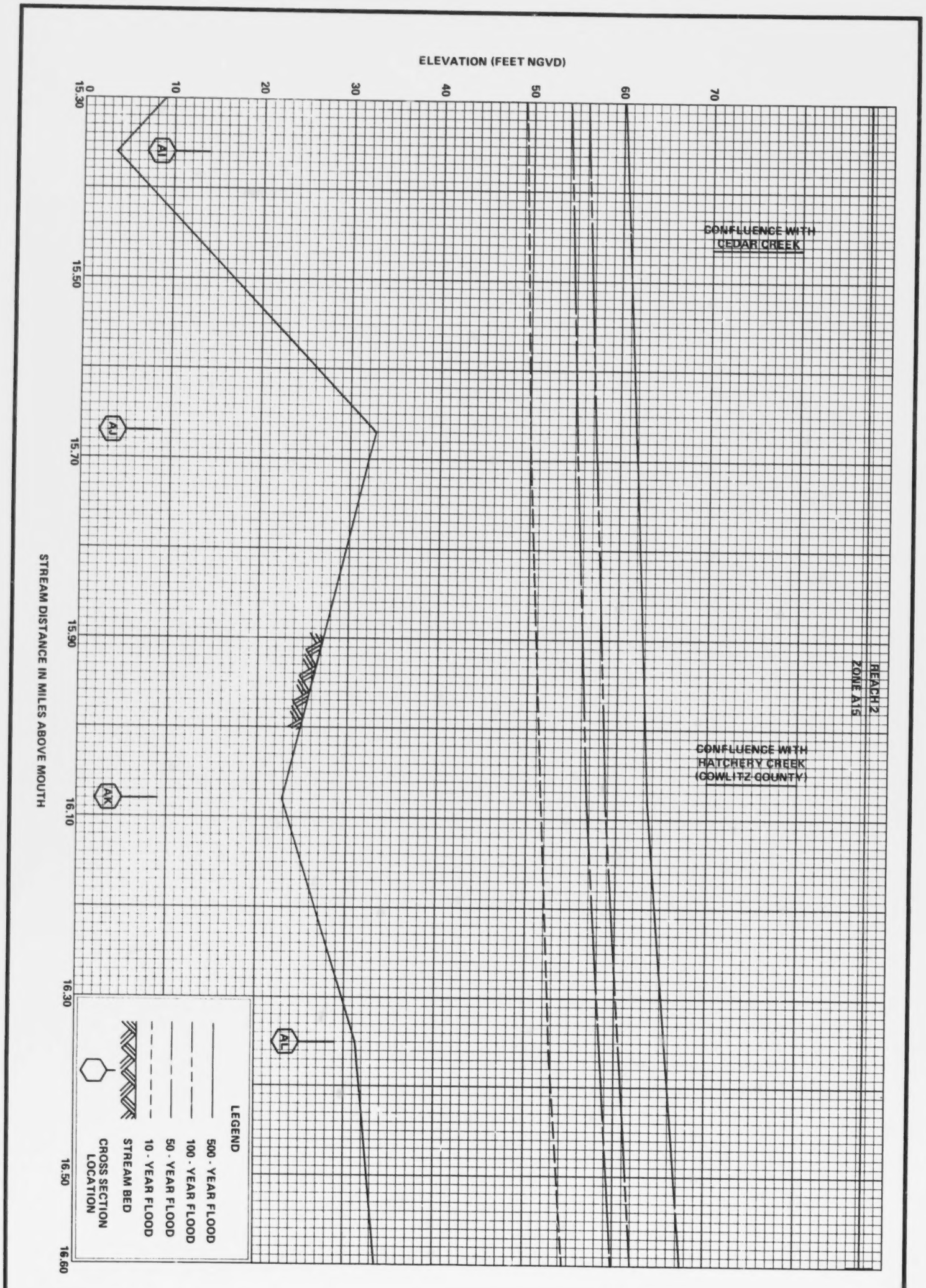


FEDERAL EMERGENCY MANAGEMENT AGENCY

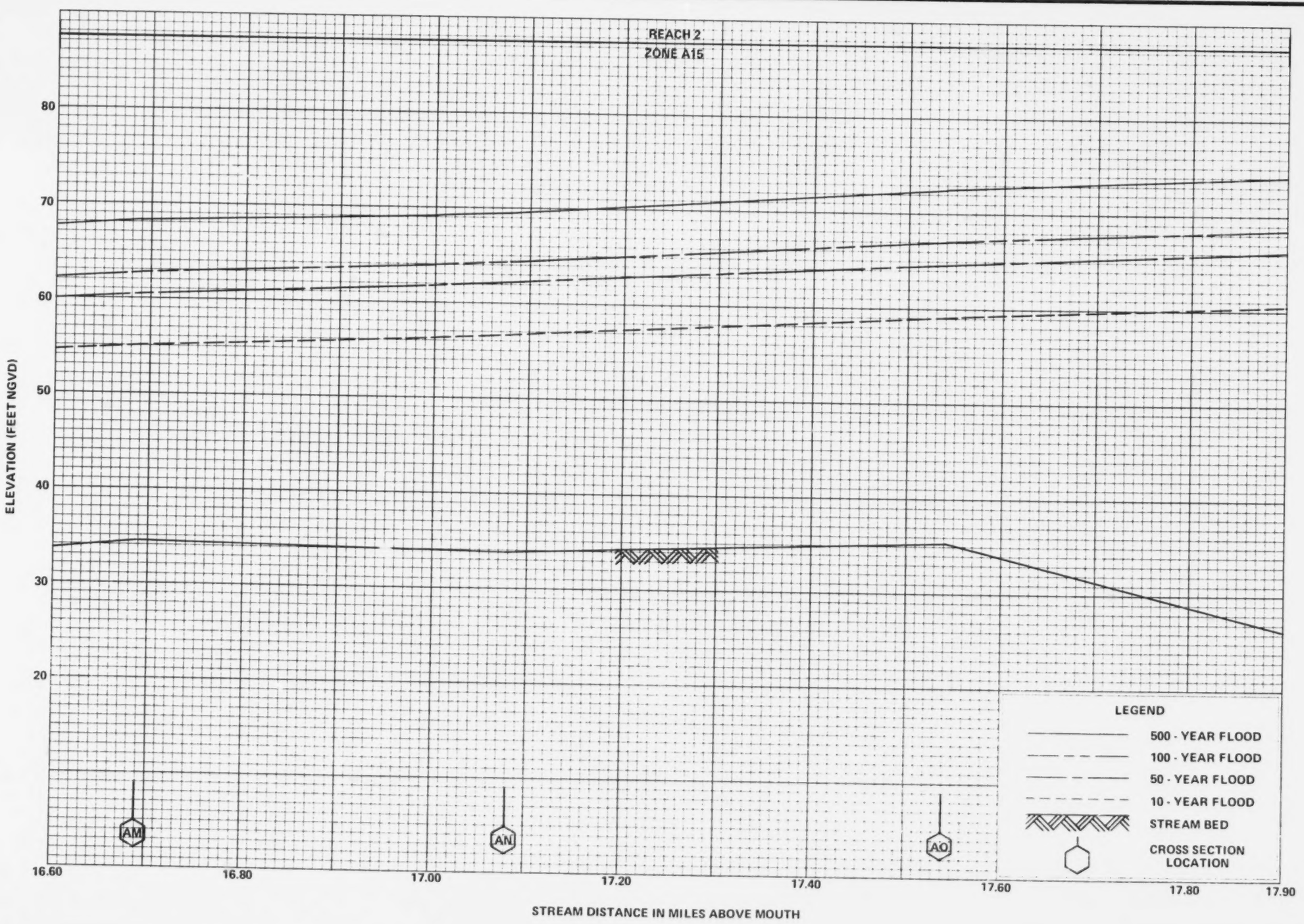
CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

LEWIS RIVER



21P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES LEWIS RIVER



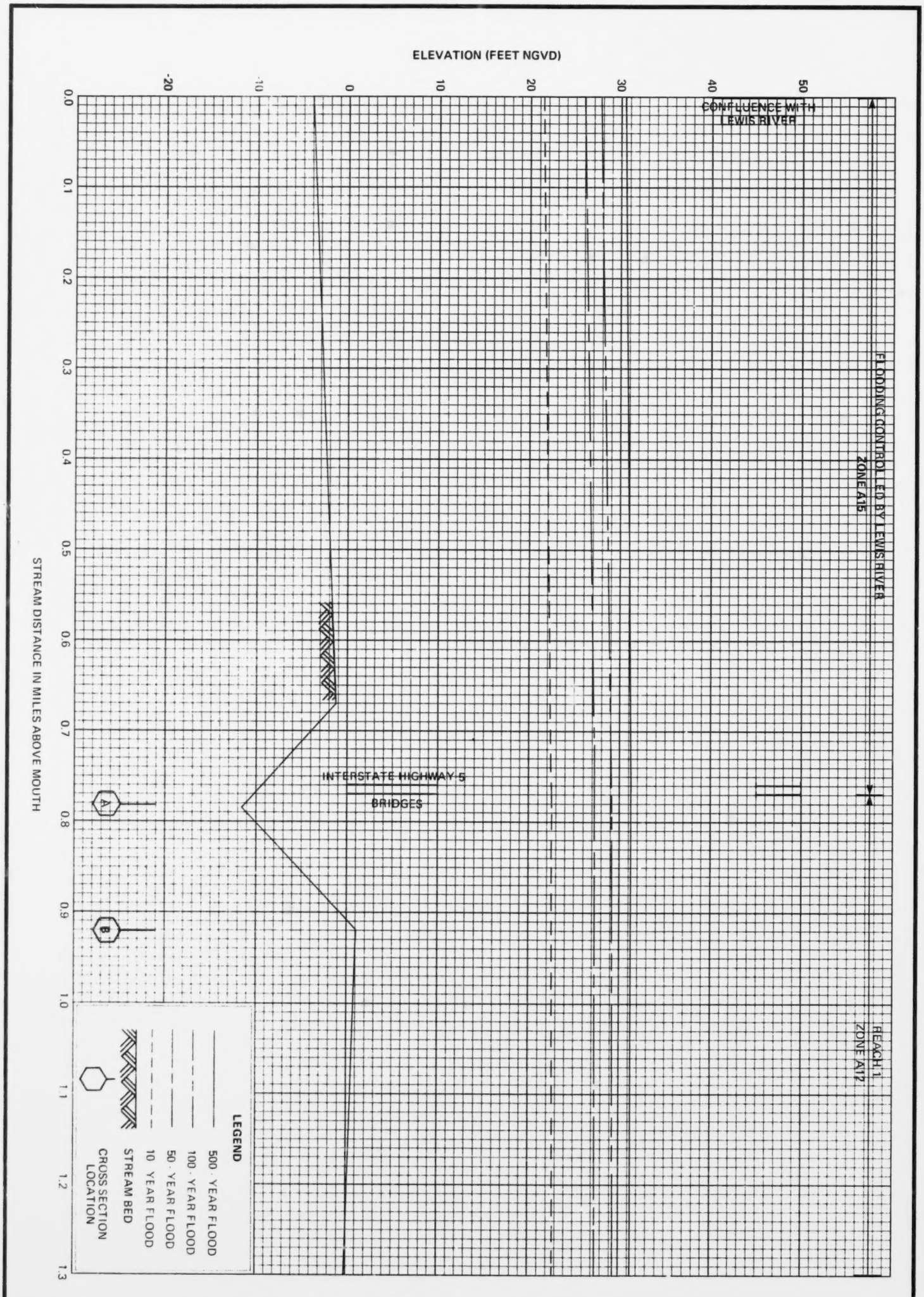
FLOOD PROFILES

LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

23P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES LEWIS RIVER



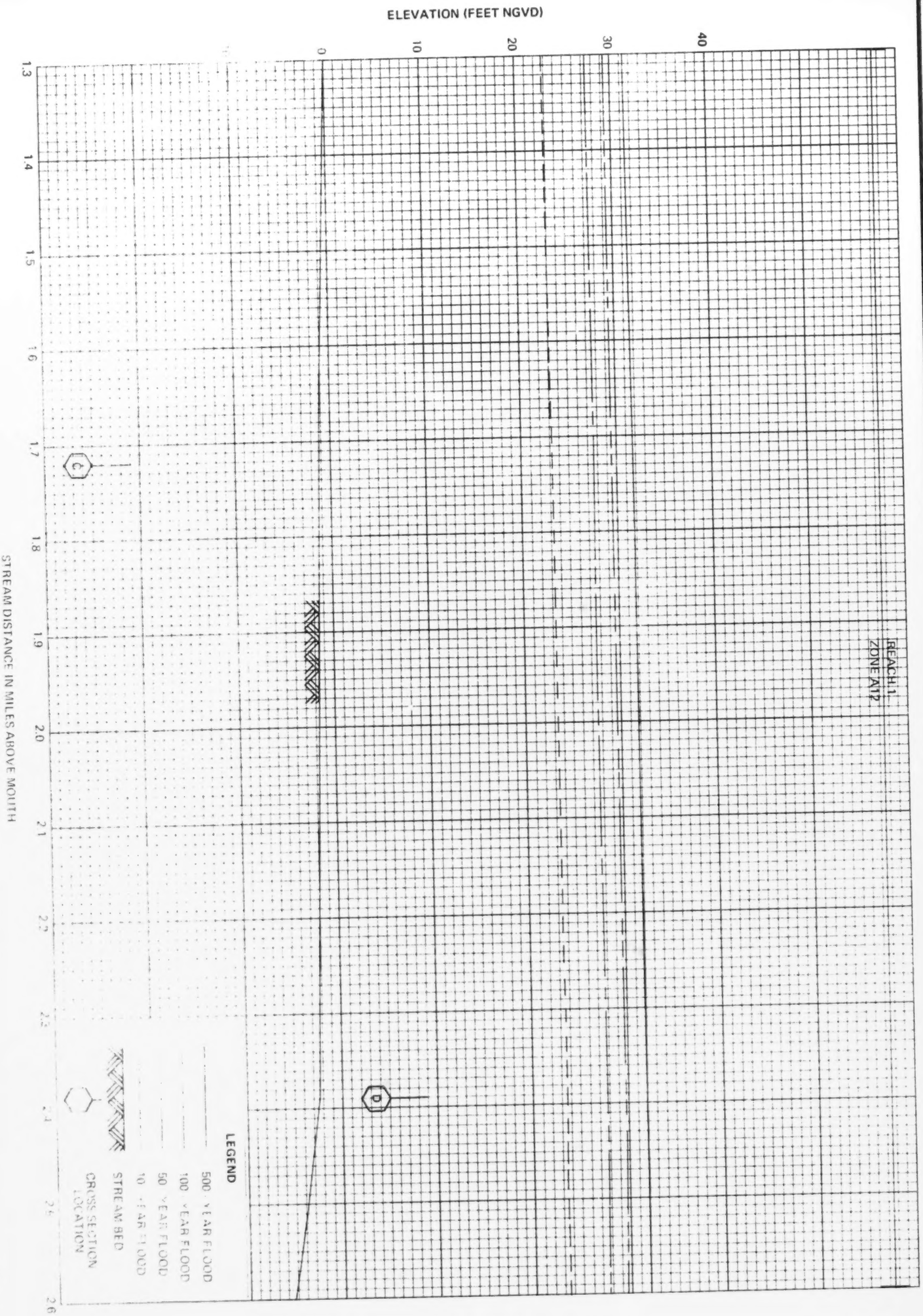
24P

FEDERAL EMERGENCY MANAGEMENT AGENCY

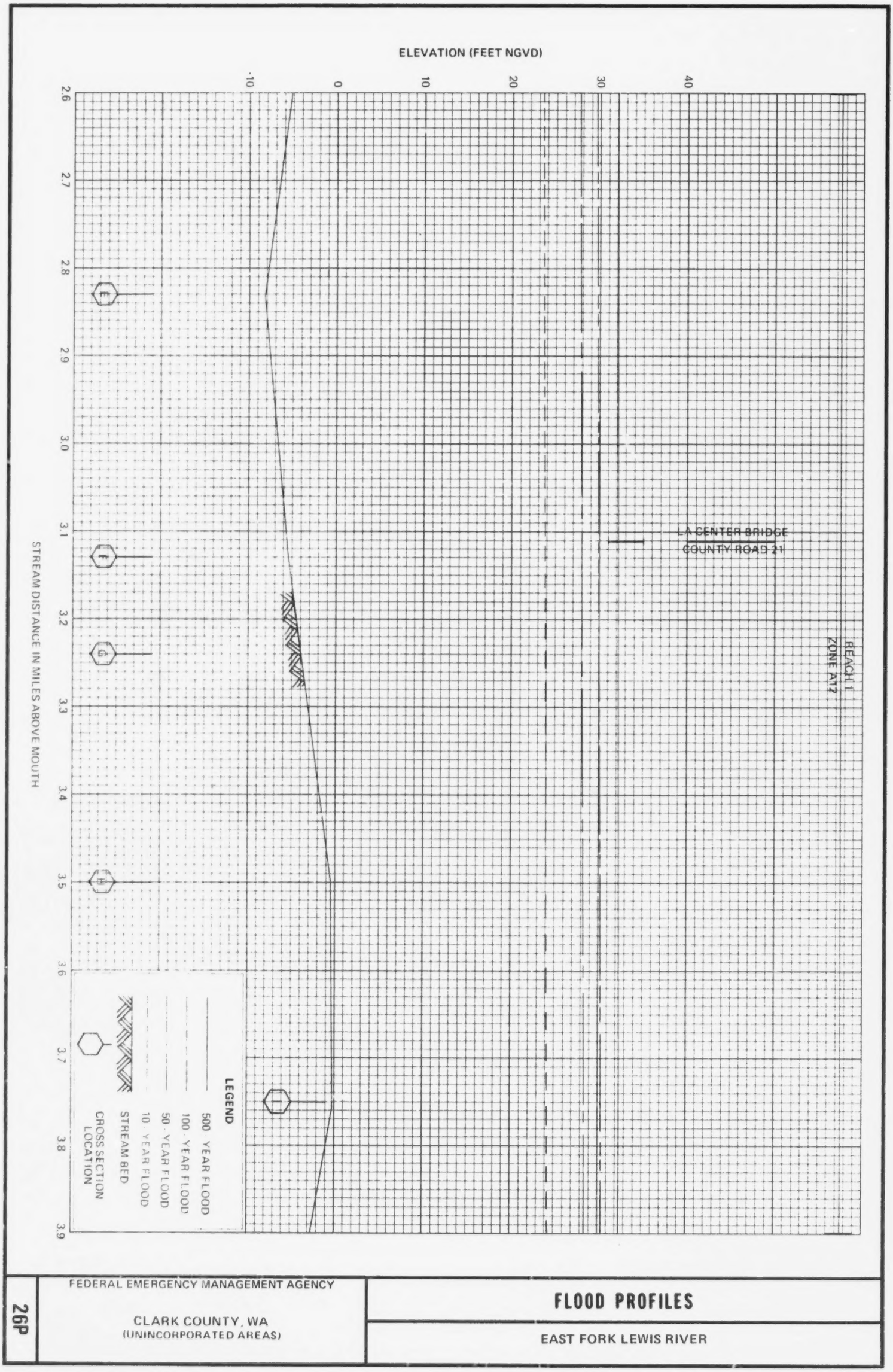
CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

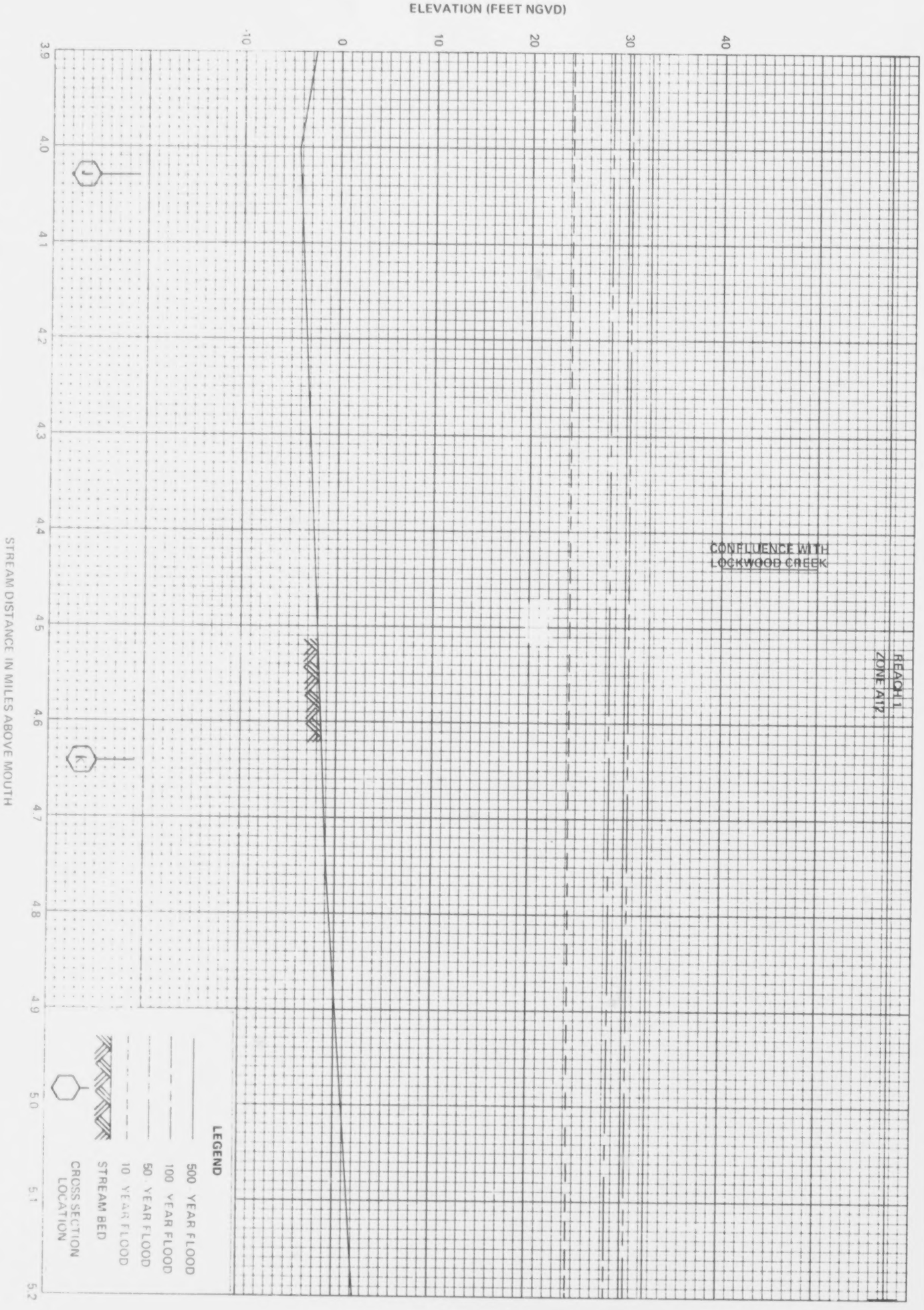
EAST FORK LEWIS RIVER



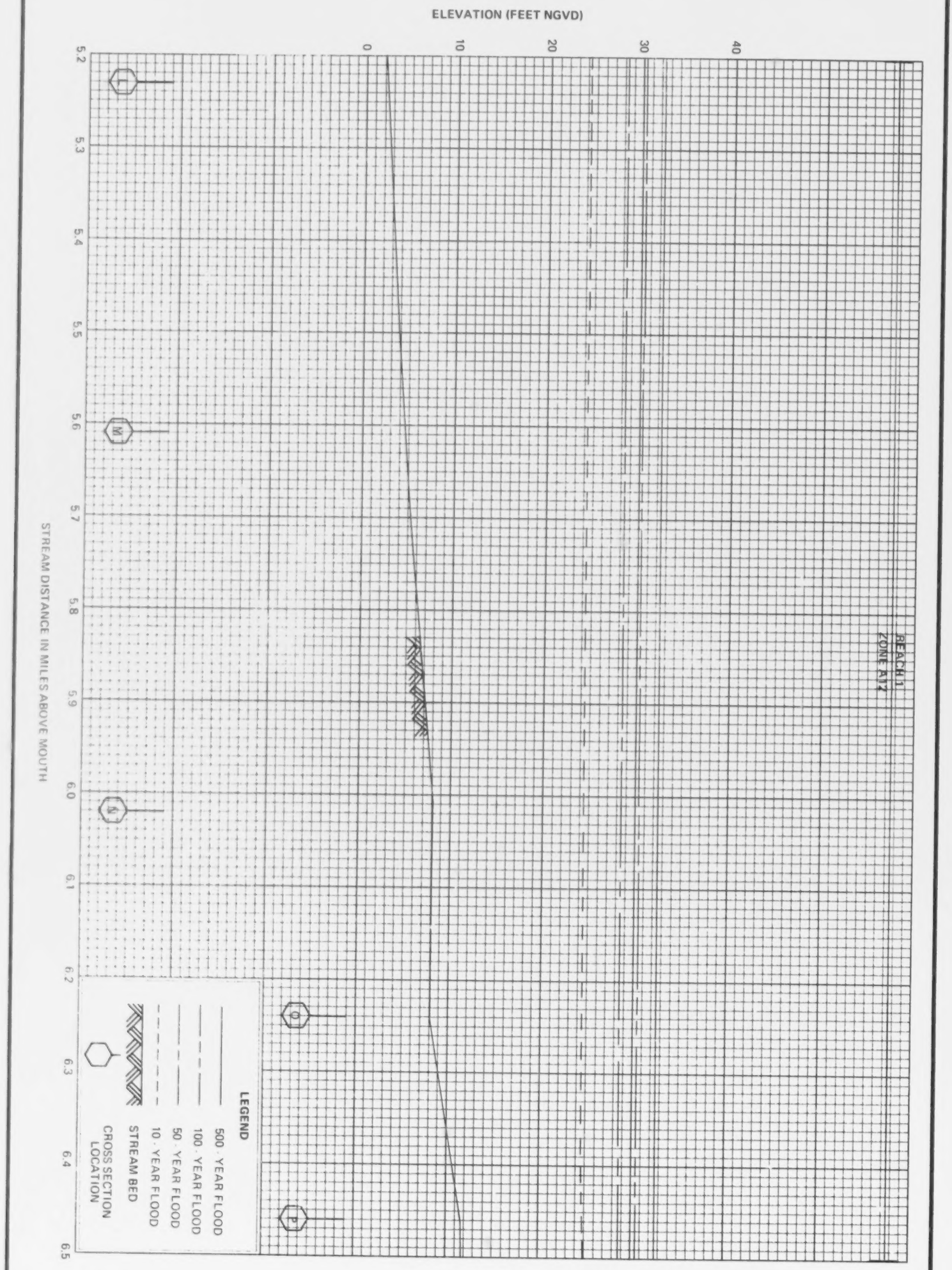
25P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES EAST FORK LEWIS RIVER



26P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES EAST FORK LEWIS RIVER



27P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES EAST FORK LEWIS RIVER



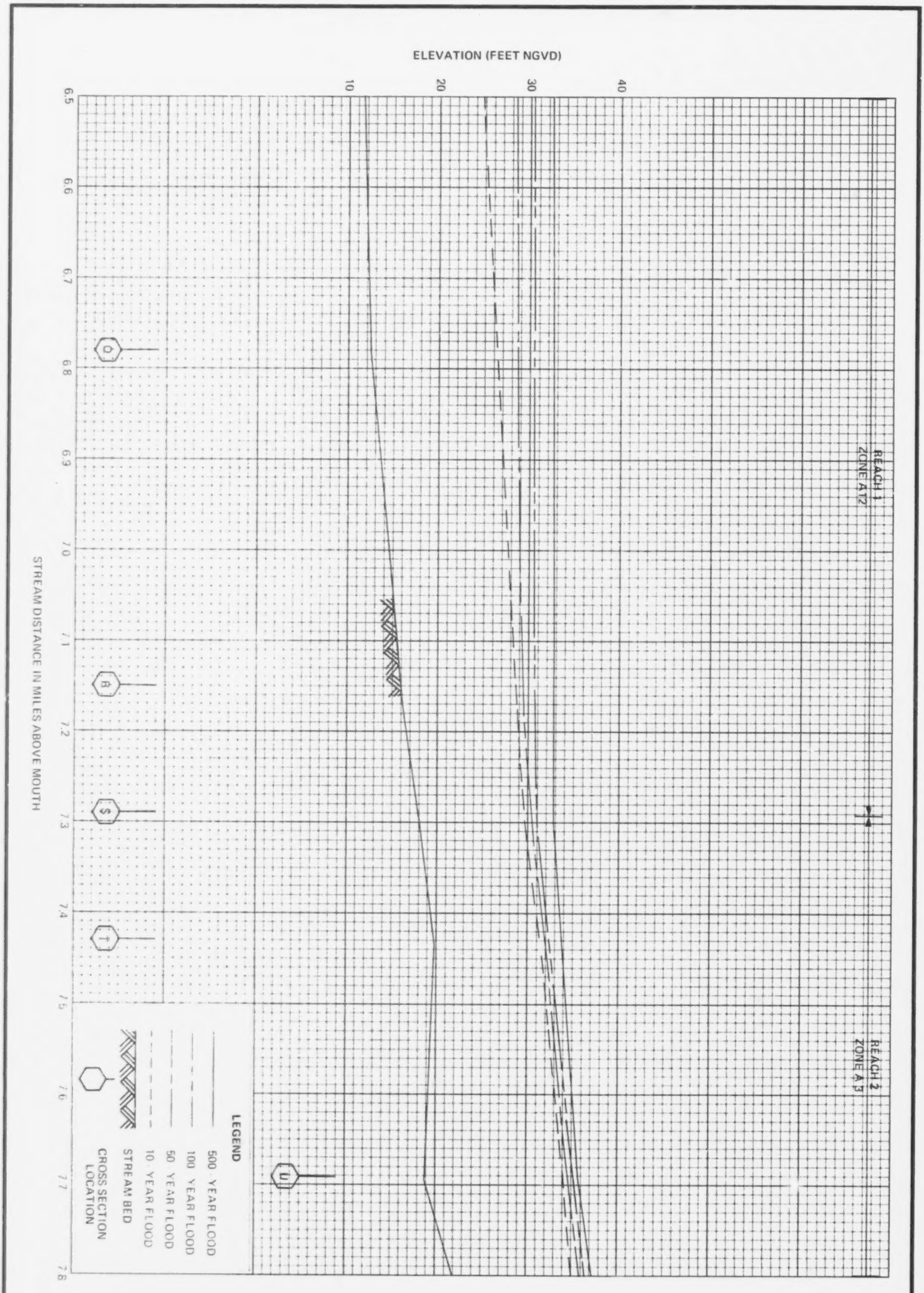
28P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

EAST FORK LEWIS RIVER



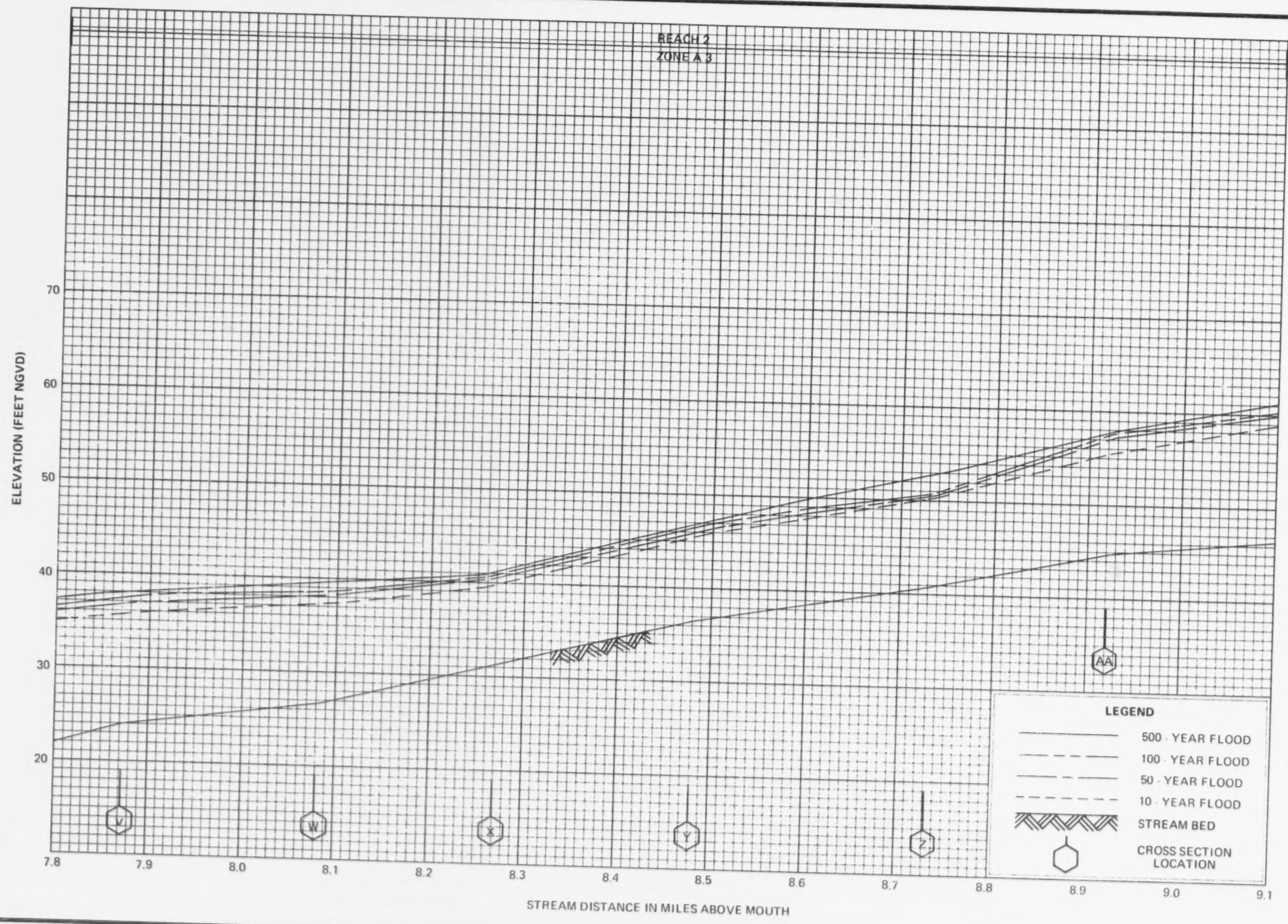
29P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

EAST FORK LEWIS RIVER

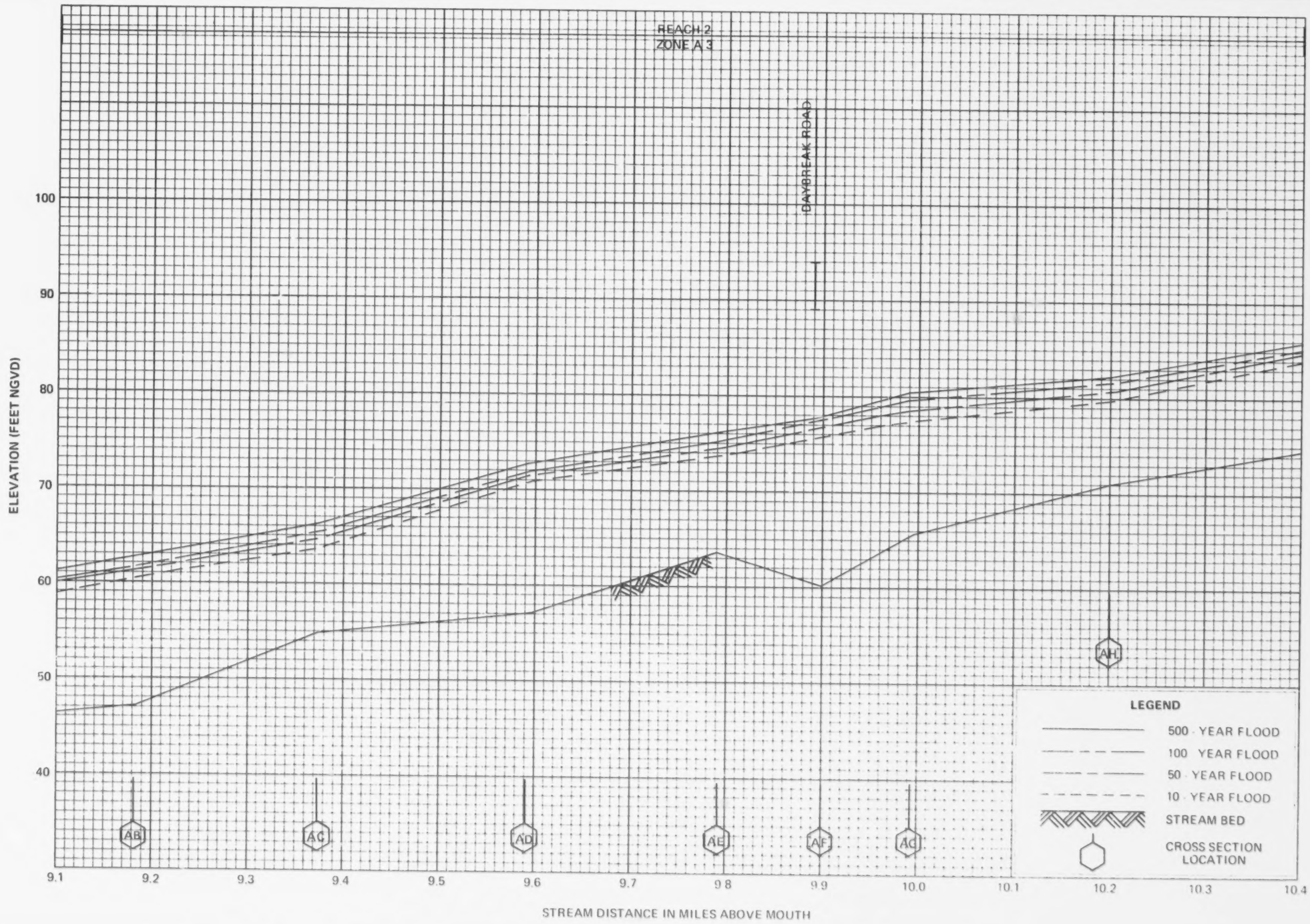


FLOOD PROFILES

EAST FORK LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

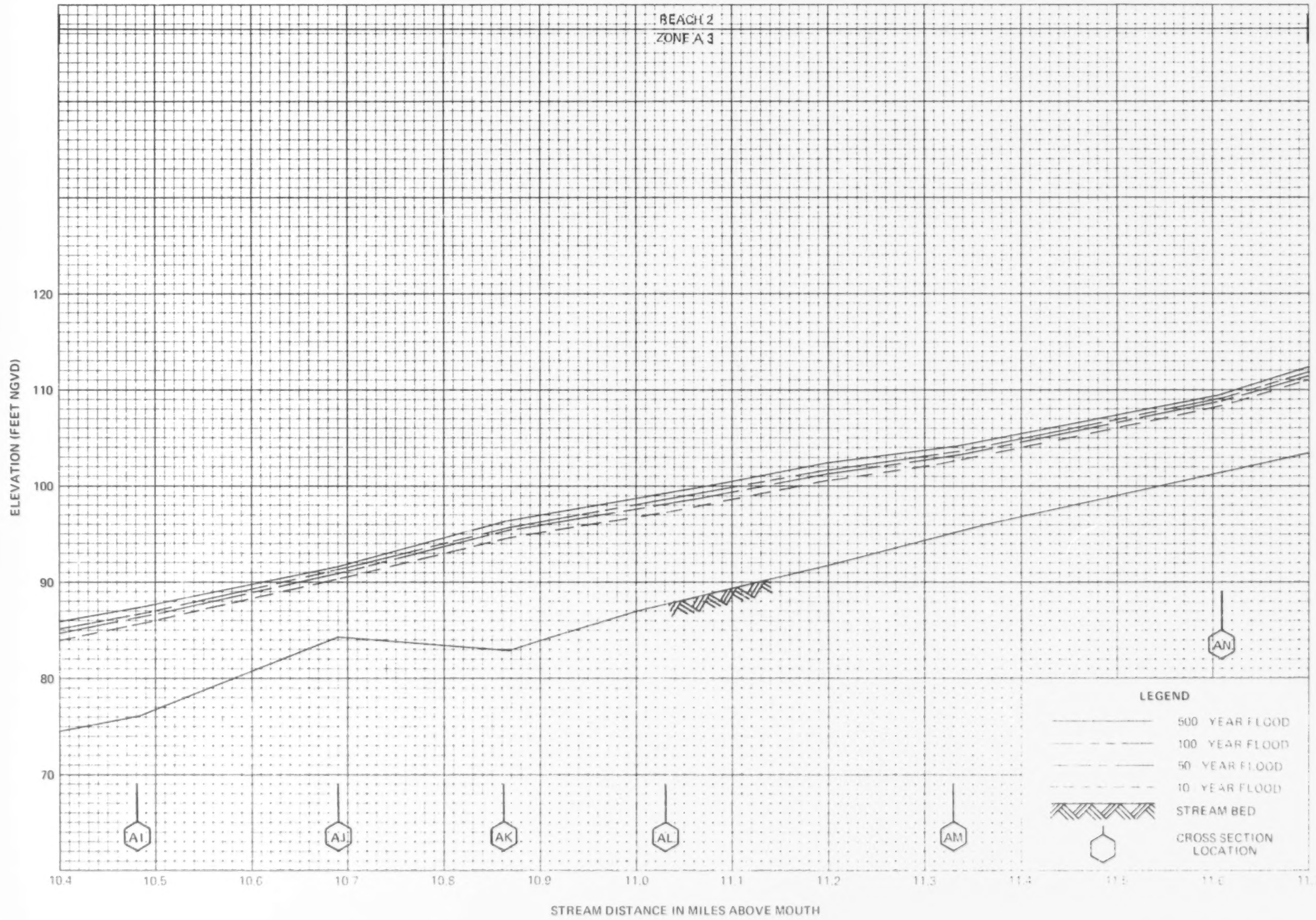


FLOOD PROFILES

EAST FORK LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)



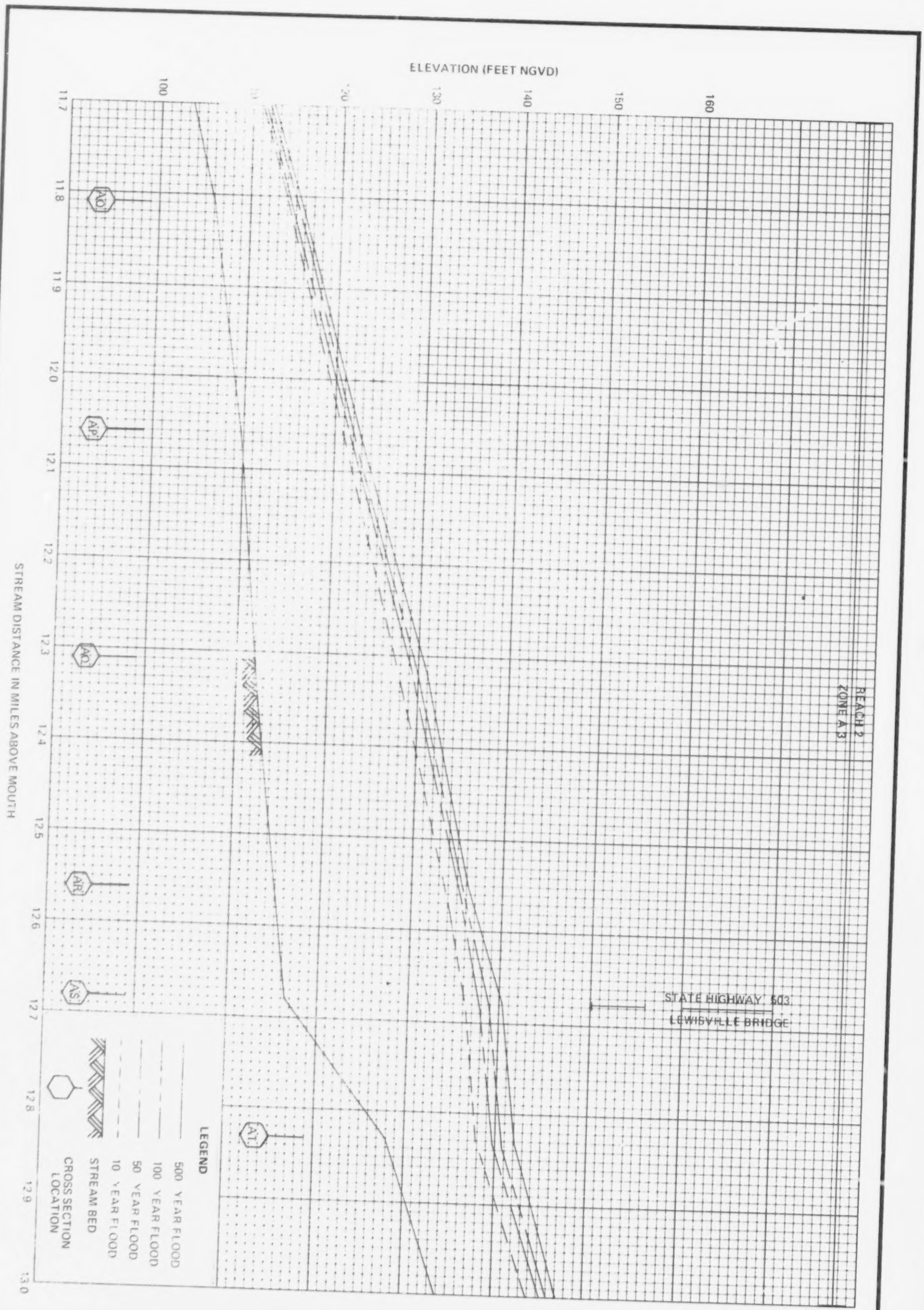
FLOOD PROFILES

EAST FORK LEWIS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

32P



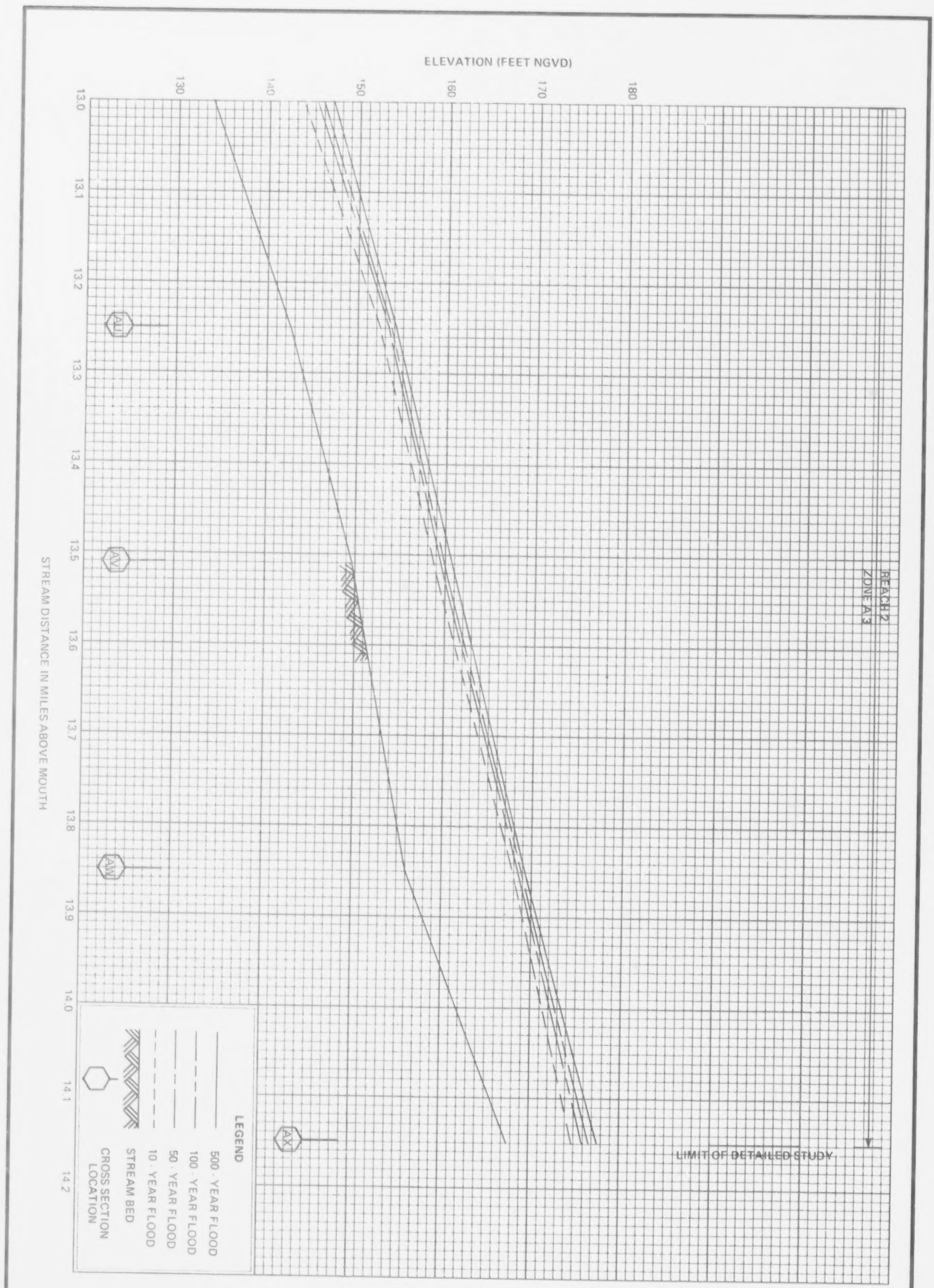
33P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

EAST FORK LEWIS RIVER



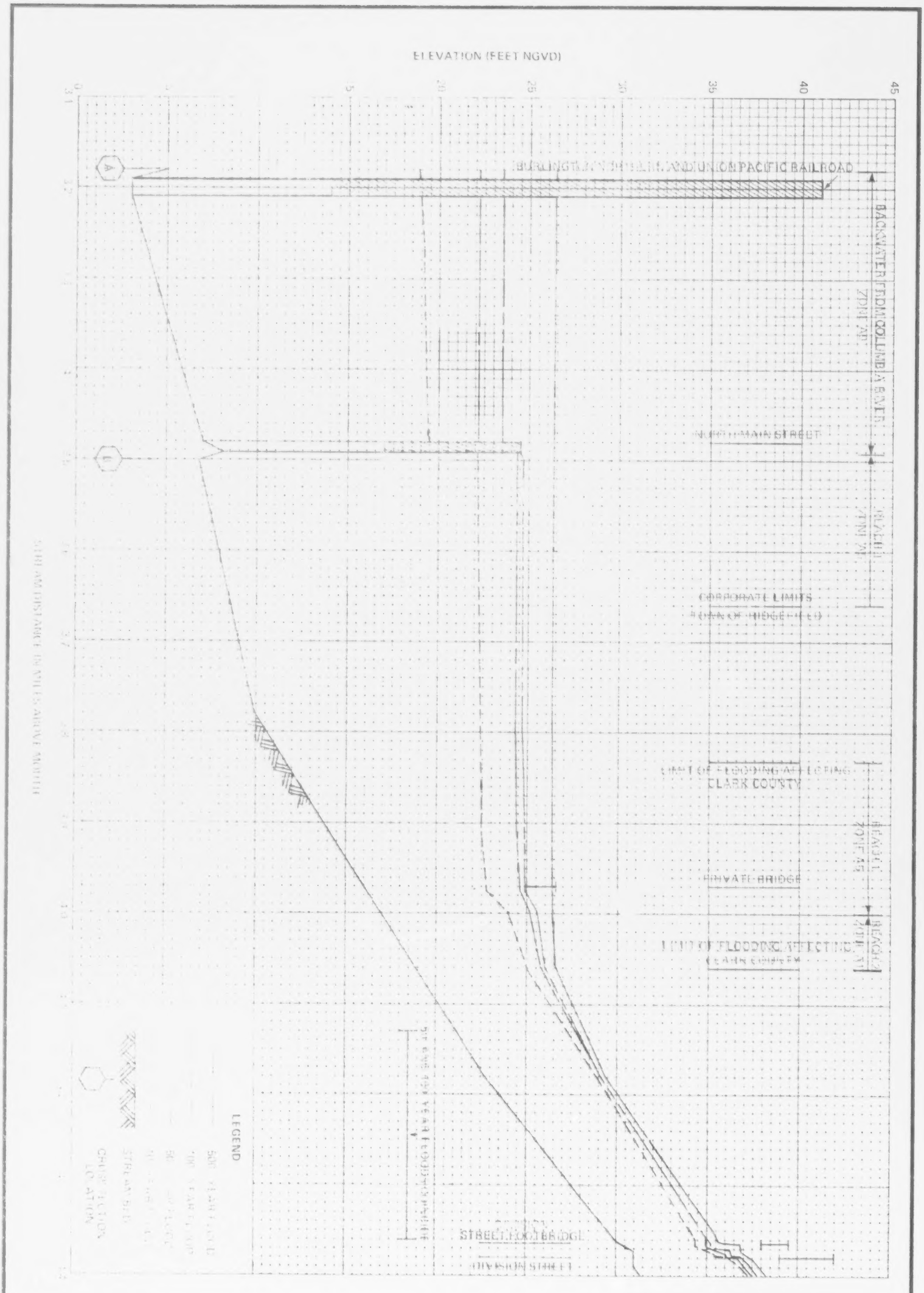
34P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

EAST FORK LEWIS RIVER



SEE MAP DISTANCE IN MILES ABOVE MOUTH

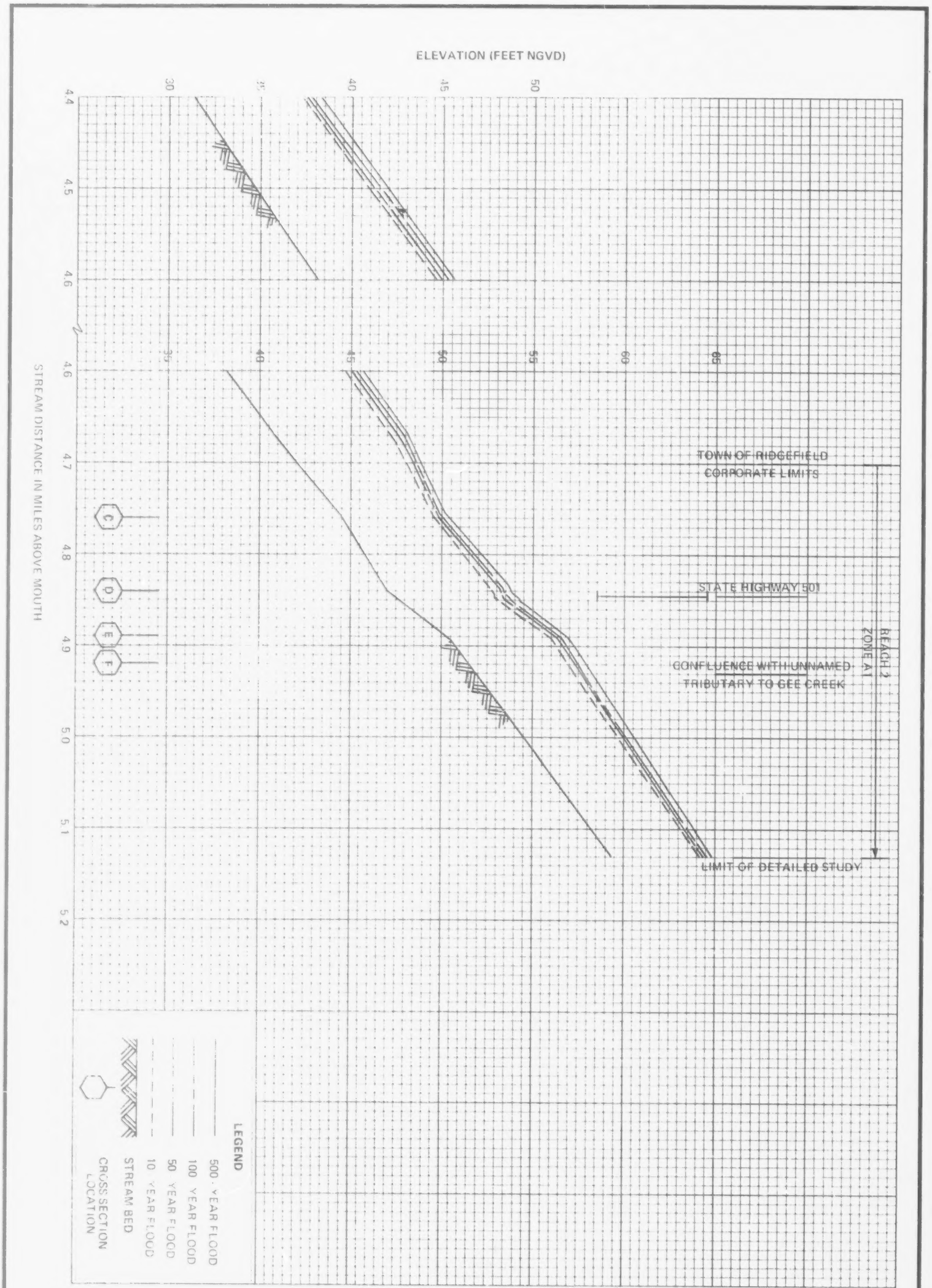
35P

FEDERAL EMERGENCY MANAGEMENT AGENCY

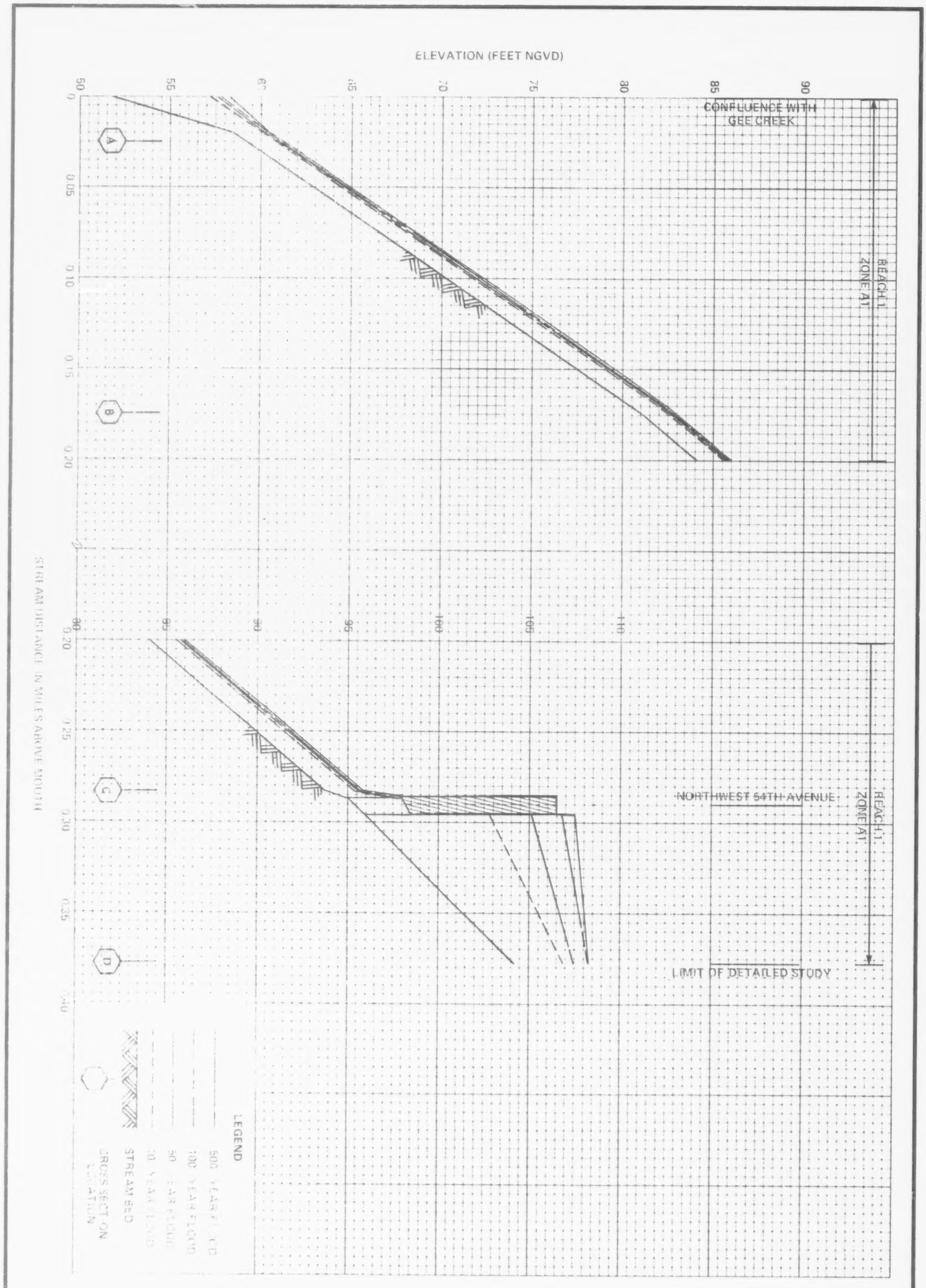
CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

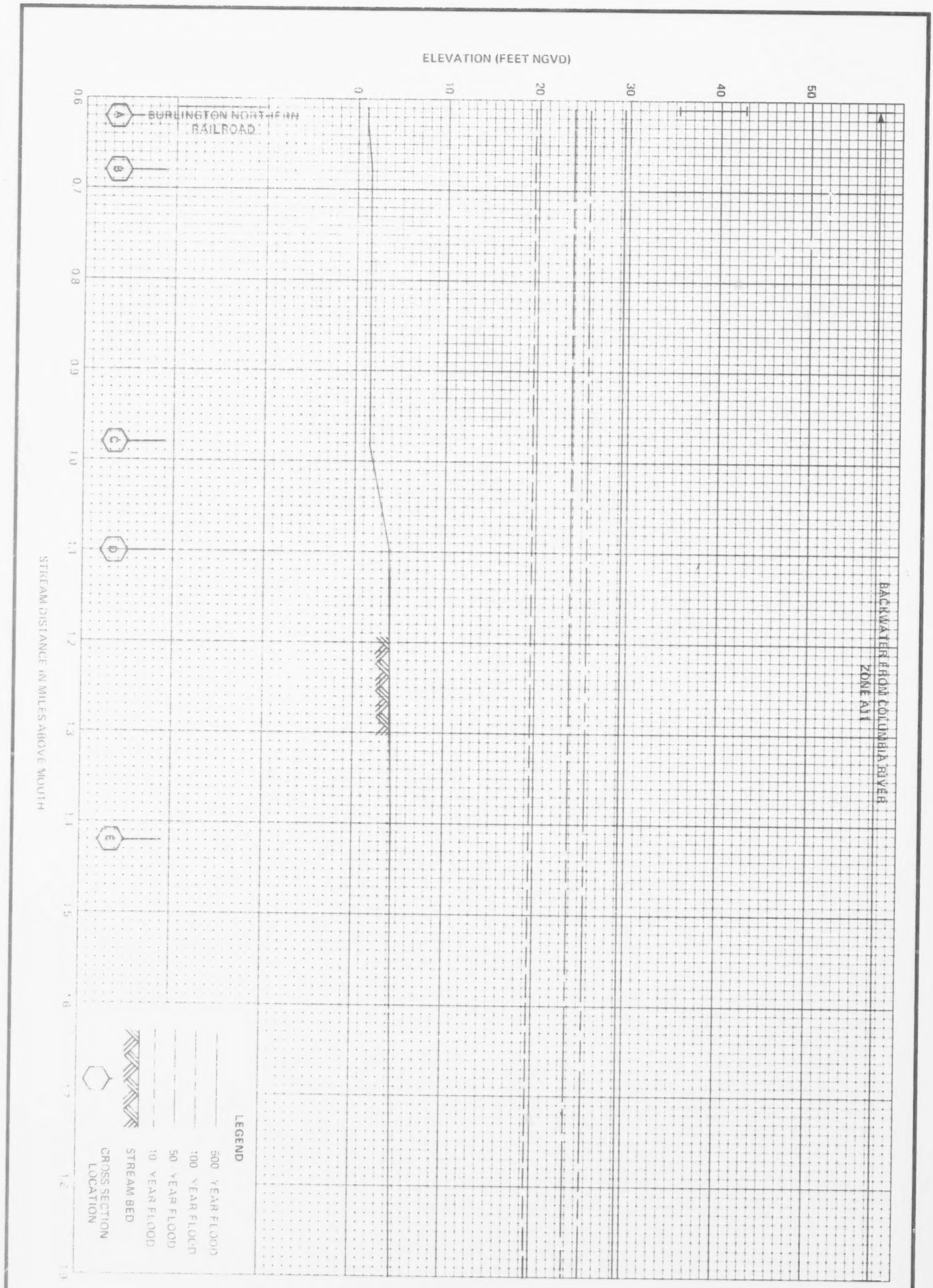
GEE CREEK



36P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES GEE CREEK



37P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES UNNAMED TRIBUTARY TO GEE CREEK



38P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

SALMON CREEK

BACKWATER FROM COLUMBIA RIVER
ZONE A11

NORTHWEST 86TH AVENUE

ELEVATION (FEET NGVD)

30
20
10

19 20 21 22 23 24 25 26

F G H I J K

LEGEND

STREAMBED

CROSS SECTION LOCATION

STREAM DISTANCE IN MILES ABOVE MOUTH

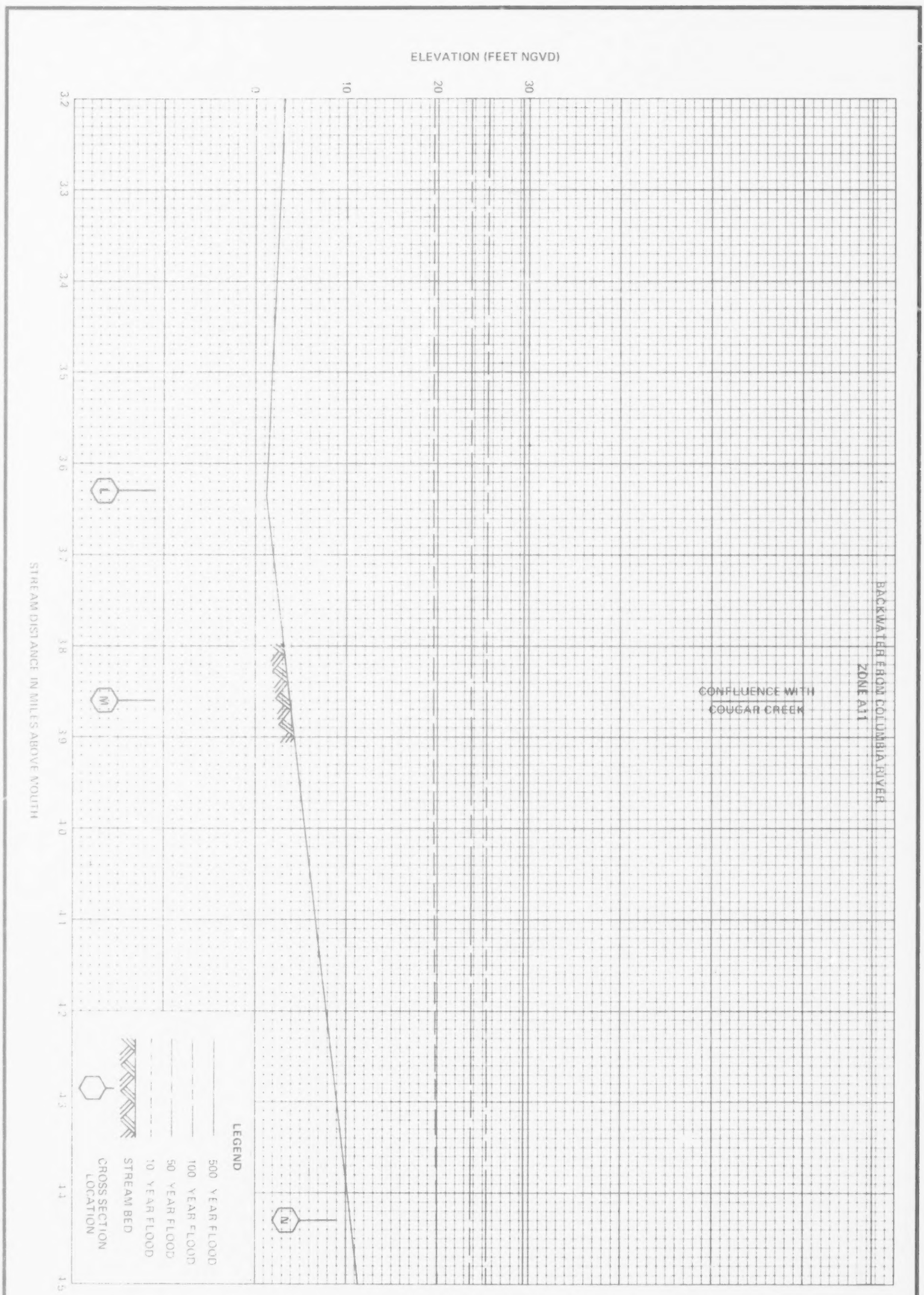
FLOOD PROFILES

SALMON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

39P



40P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES SALMON CREEK

BACKWATER FROM COLUMBIA RIVER
ZONE A11

REACH 1
ZONE A4

50

40

30

20

10

0

ELEVATION (FEET) (NGVD)

S

T

LEGEND

O

P

Q

R

FLOOD PROFILES

SALMON CREEK

CLARK COUNTY, WA

41P

REACH 1
ZONE A4

REACH 2
ZONE A3

INTERSTATE HIGHWAY-5

CONFLUENCE WITH HAYDEN CR.

TRIBUTARY FROM ST. JOHNS AREA

ELEVATION (FEET NGVD)

100
90
80
70

U V W X Y Z AA AB AC AD AE AF AH

5.8 5.9 6.0 6.1 6.2 6.3 6.4 6.5 6.6 6.7 6.8

STREAM DISTANCE IN MILES ABOVE MOUTH

LEGEND

STREAM BED

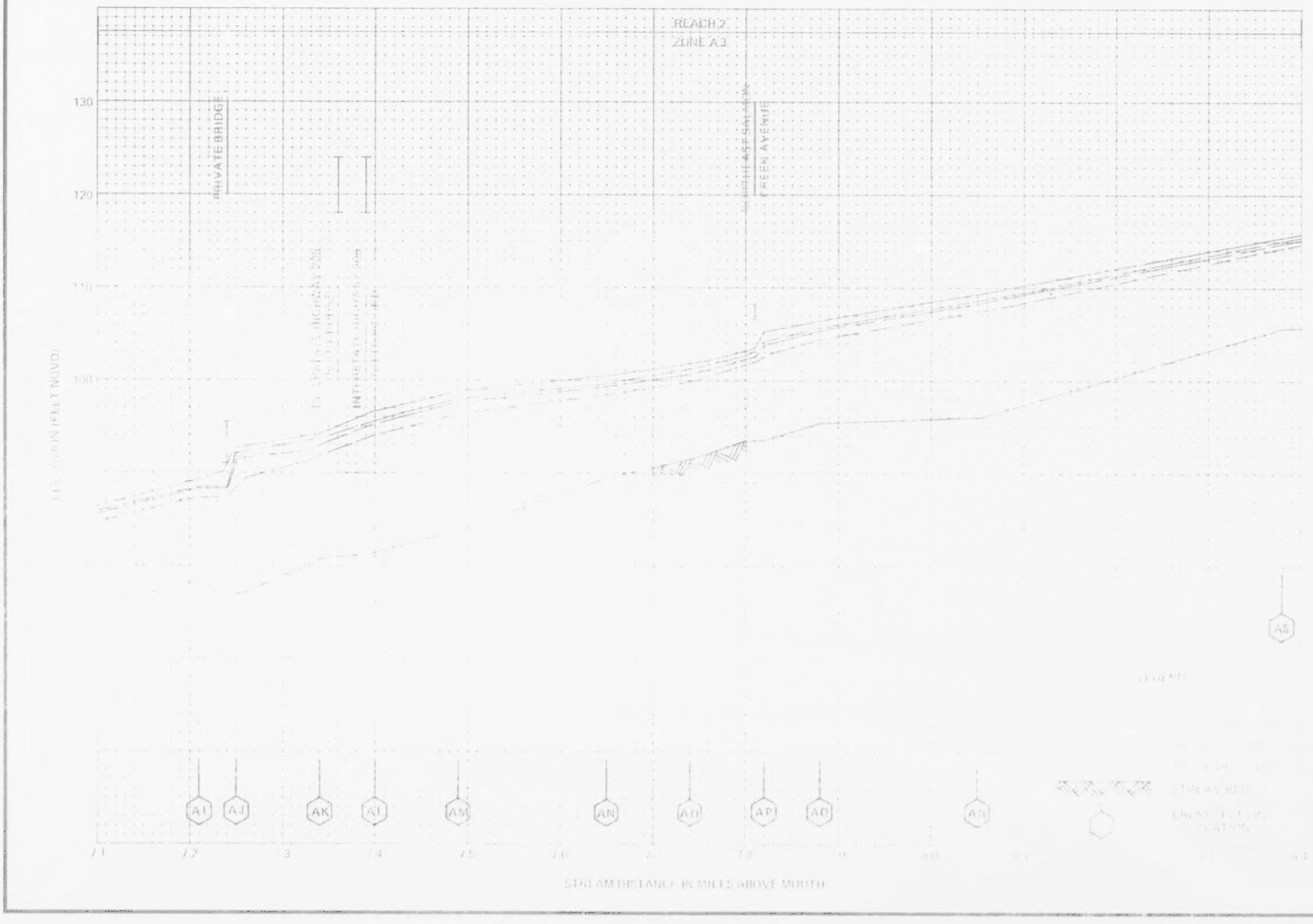
CROSS SECTION LOCATION

FLOOD PROFILES

SALMON CREEK

CLARK COUNTY, WA.

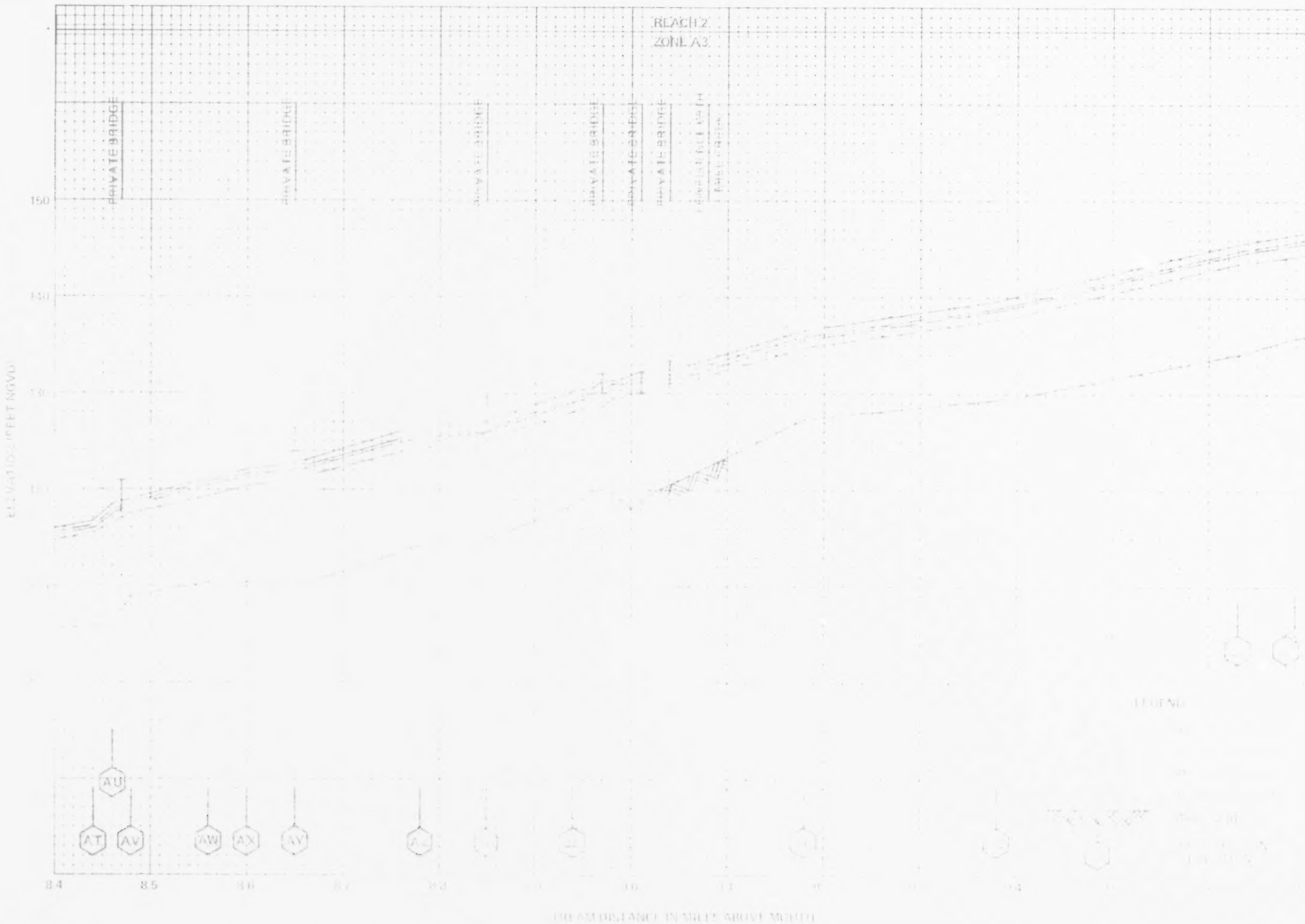
42P



FLOOD PROFILES

SALMON CREEK

43P

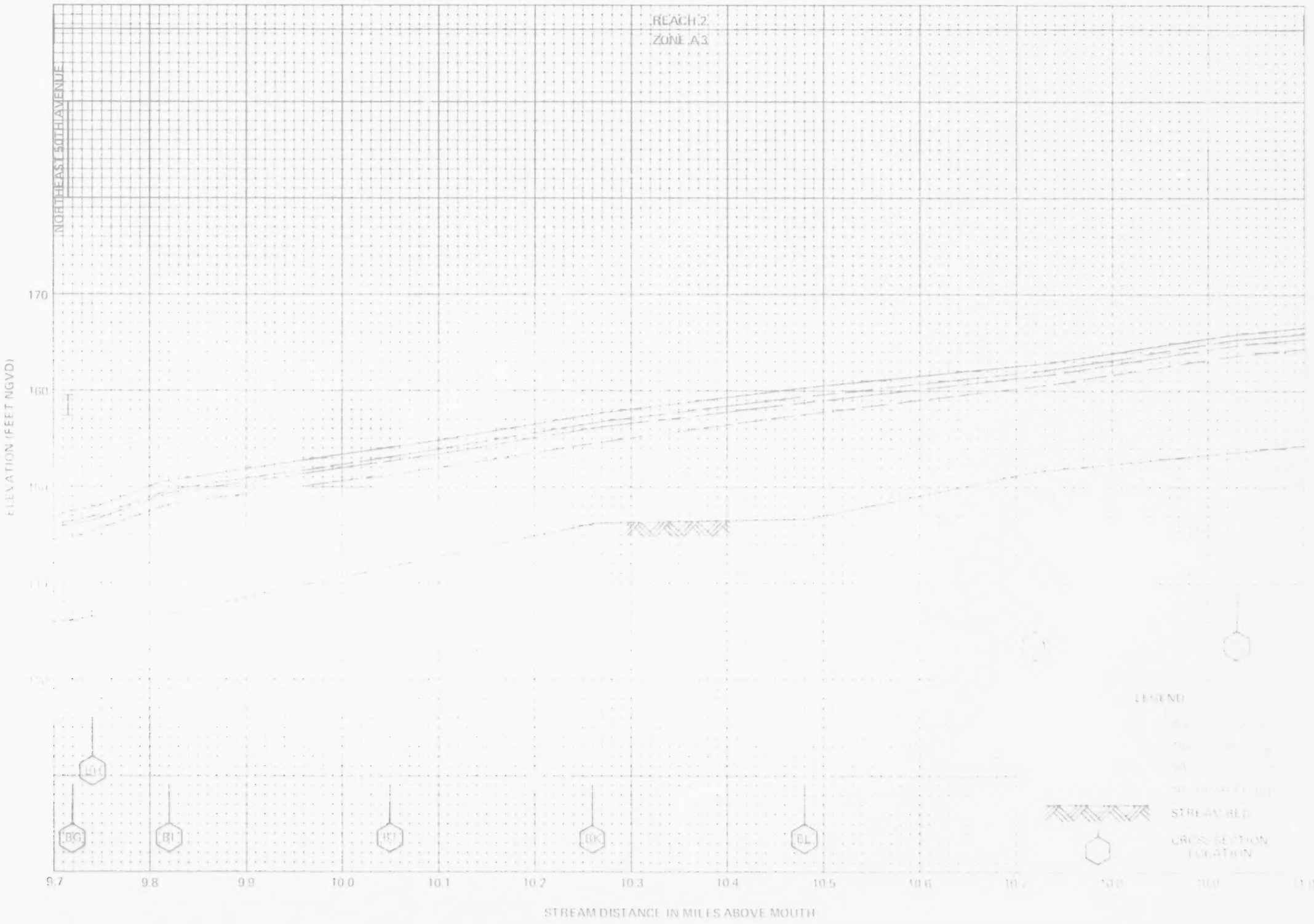


FLOOD PROFILES

SALMON CREEK

CLARK COUNTY, WA
DEPARTMENT OF ENVIRONMENTAL SERVICES

44P



FLOOD PROFILES

SALMON CREEK

45P

REACH 2
ZONE A3

NORTHEAST 72ND AVENUE

CONFLUENCE WITH GLENWOOD CREEK

ELEVATION (FEET NGVD)

180
170
160
150

BO BP BQ MH BS BT BU

11.0 11.1 11.2 11.3 11.4 11.5 11.6 11.7 11.8 11.9 12.0 12.1 12.2 12.3

STREAM DISTANCE IN MILES ABOVE MOUTH

LEGEND

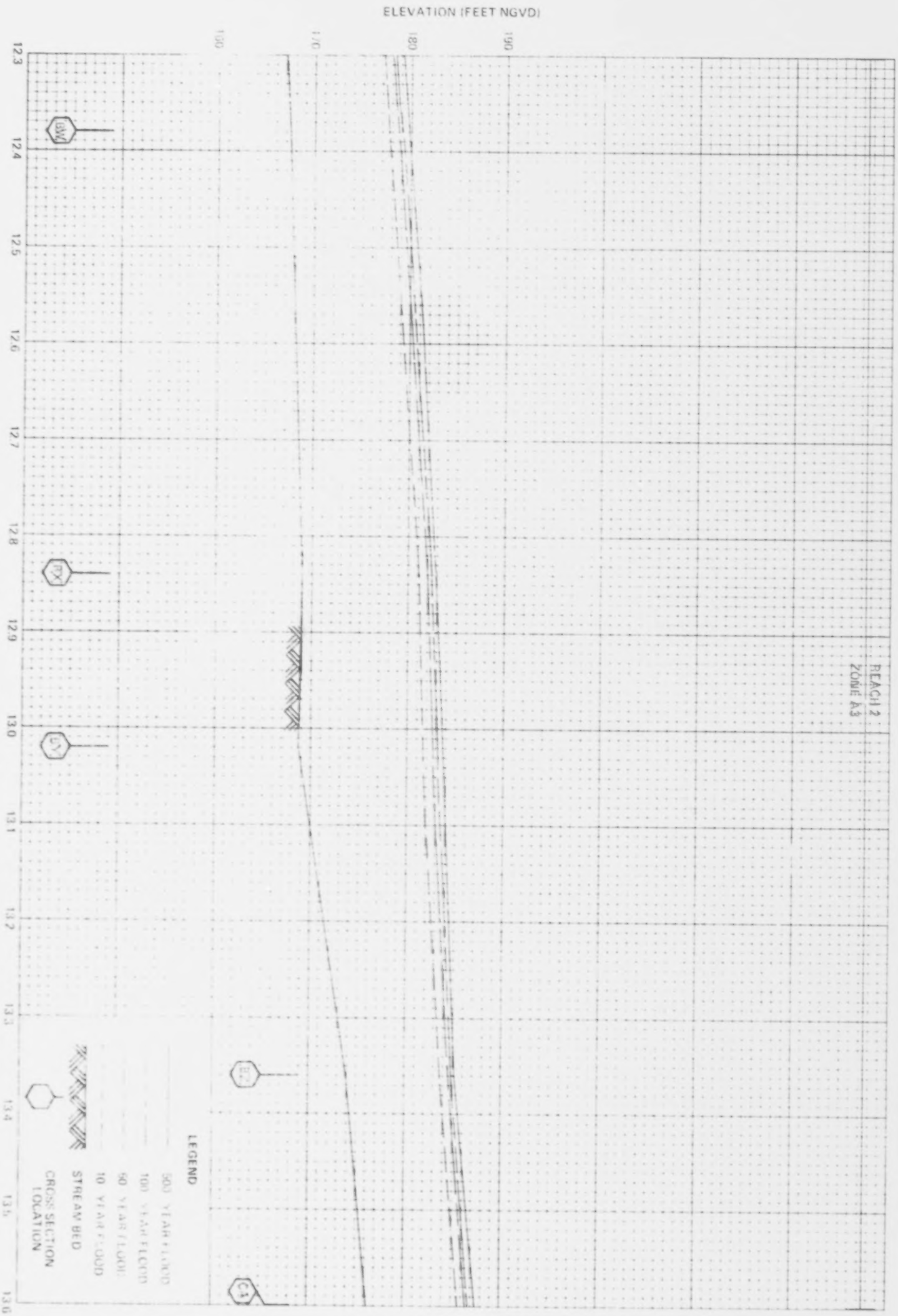
500 - YEAR FLOOD
100 - YEAR FLOOD
50 - YEAR FLOOD
10 - YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

FLOOD PROFILES

SALMON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA.
UNINCORPORATED AREAS



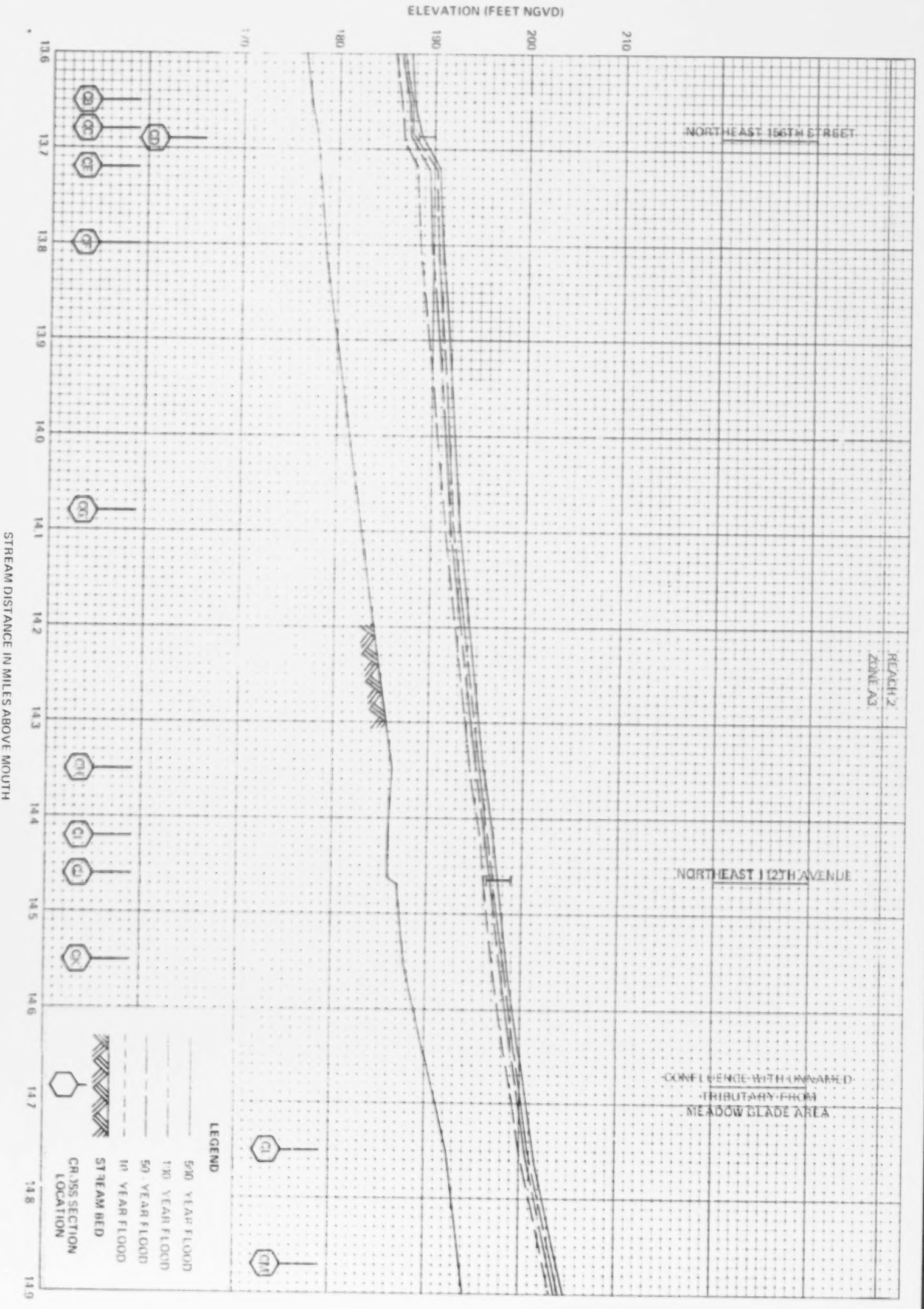
47P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

SALMON CREEK

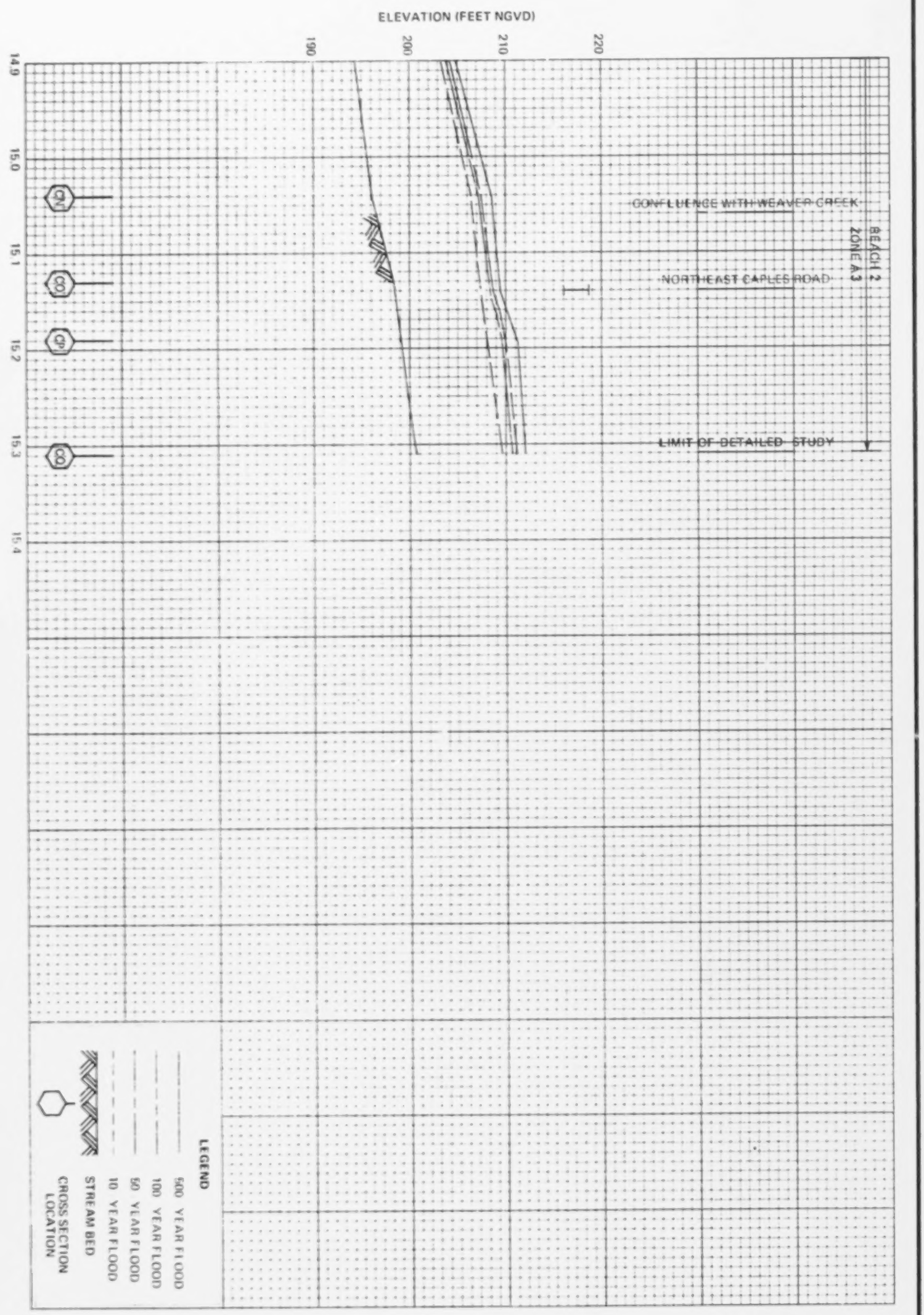


FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

SALMON CREEK

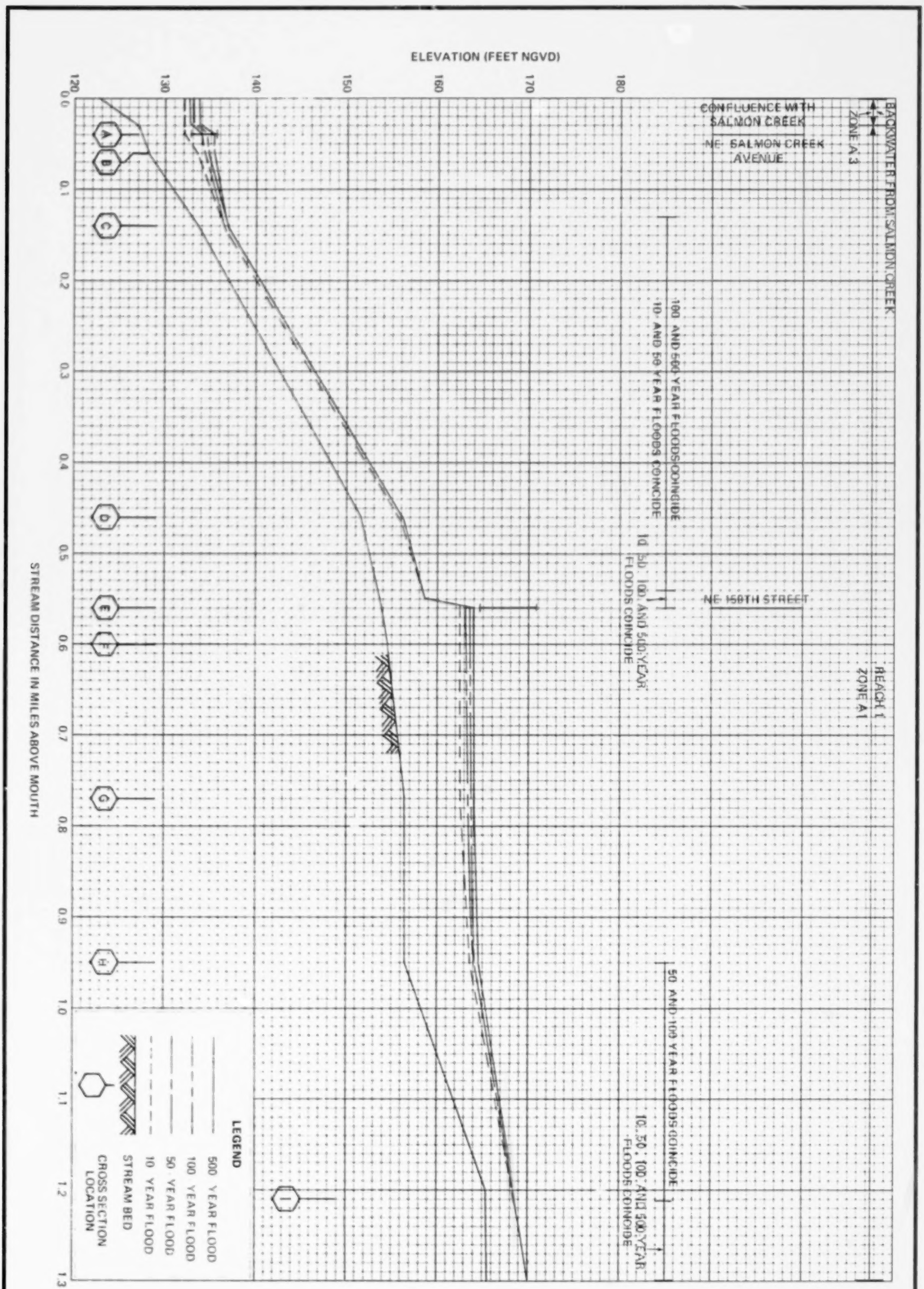


FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

SALMON CREEK



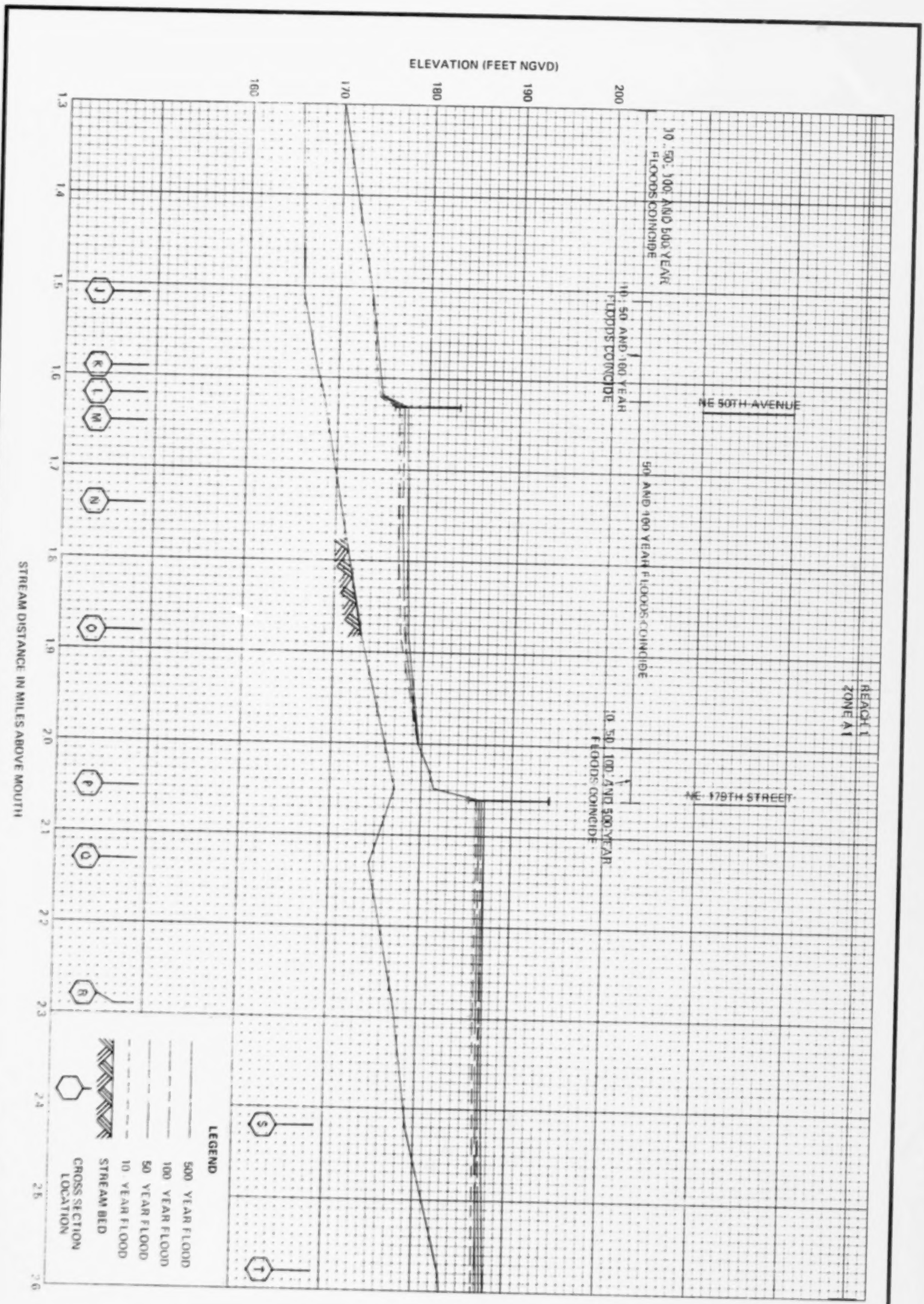
50P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

MILL CREEK



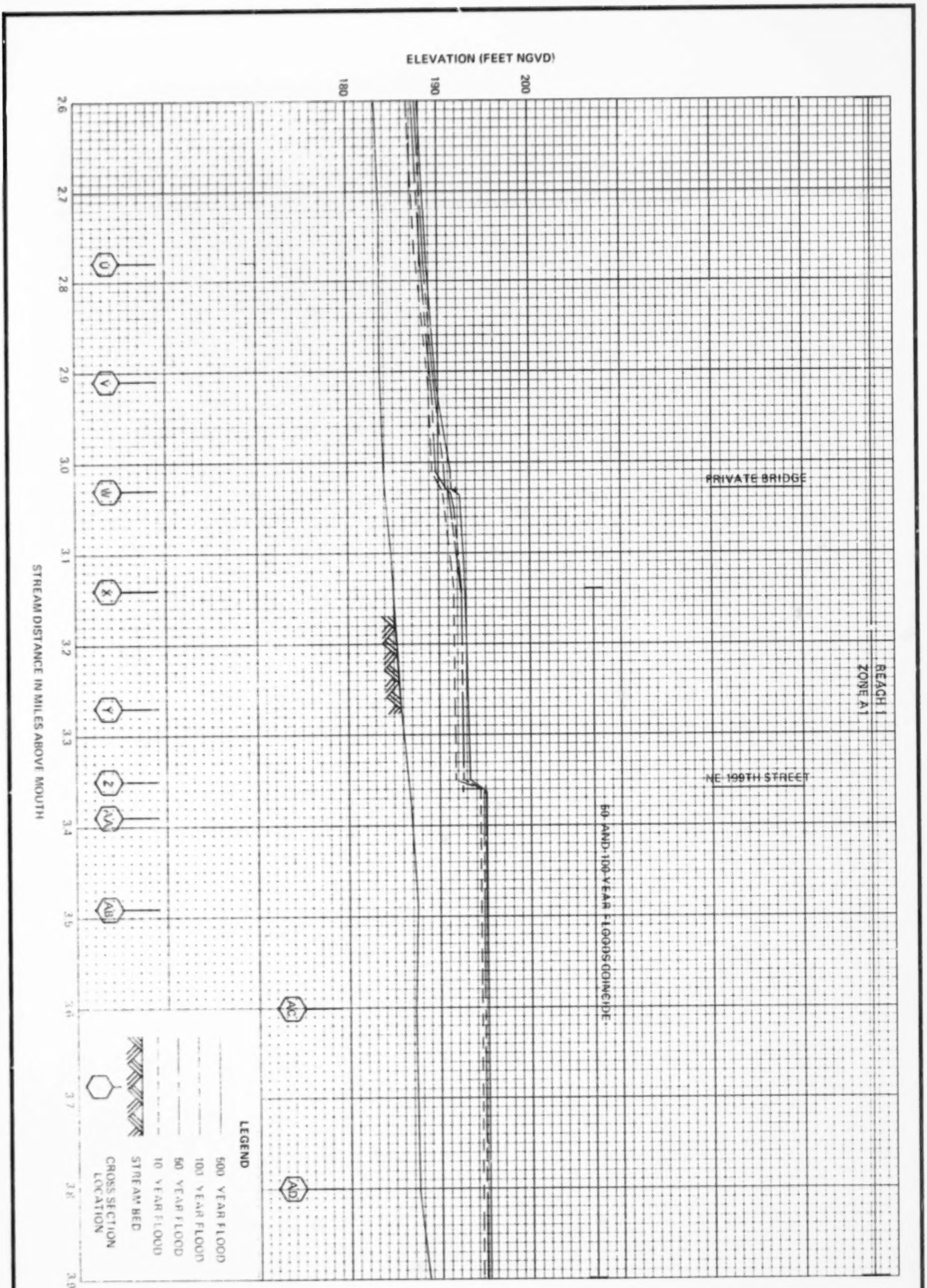
51P

FEDERAL EMERGENCY MANAGEMENT AGENCY

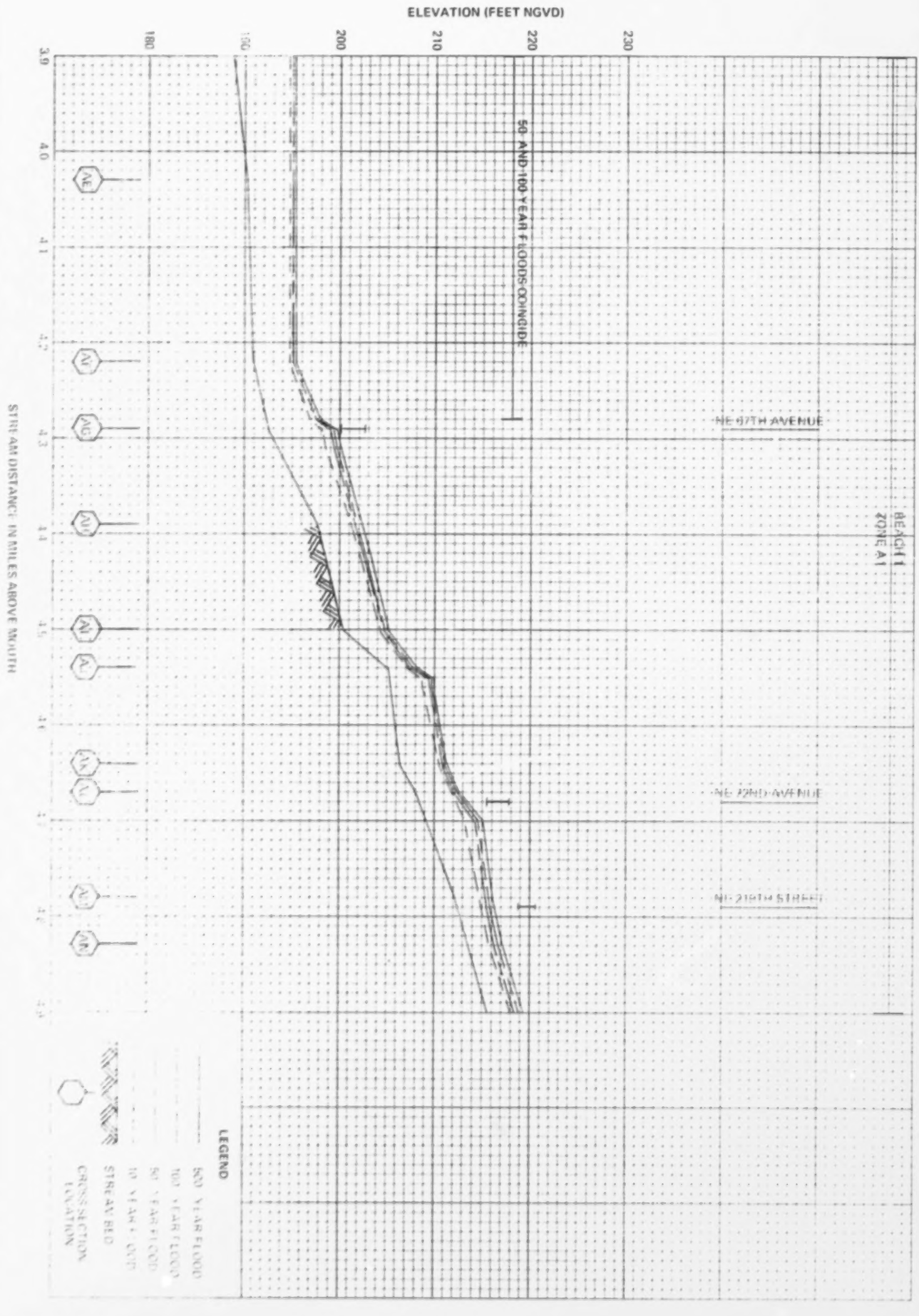
CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

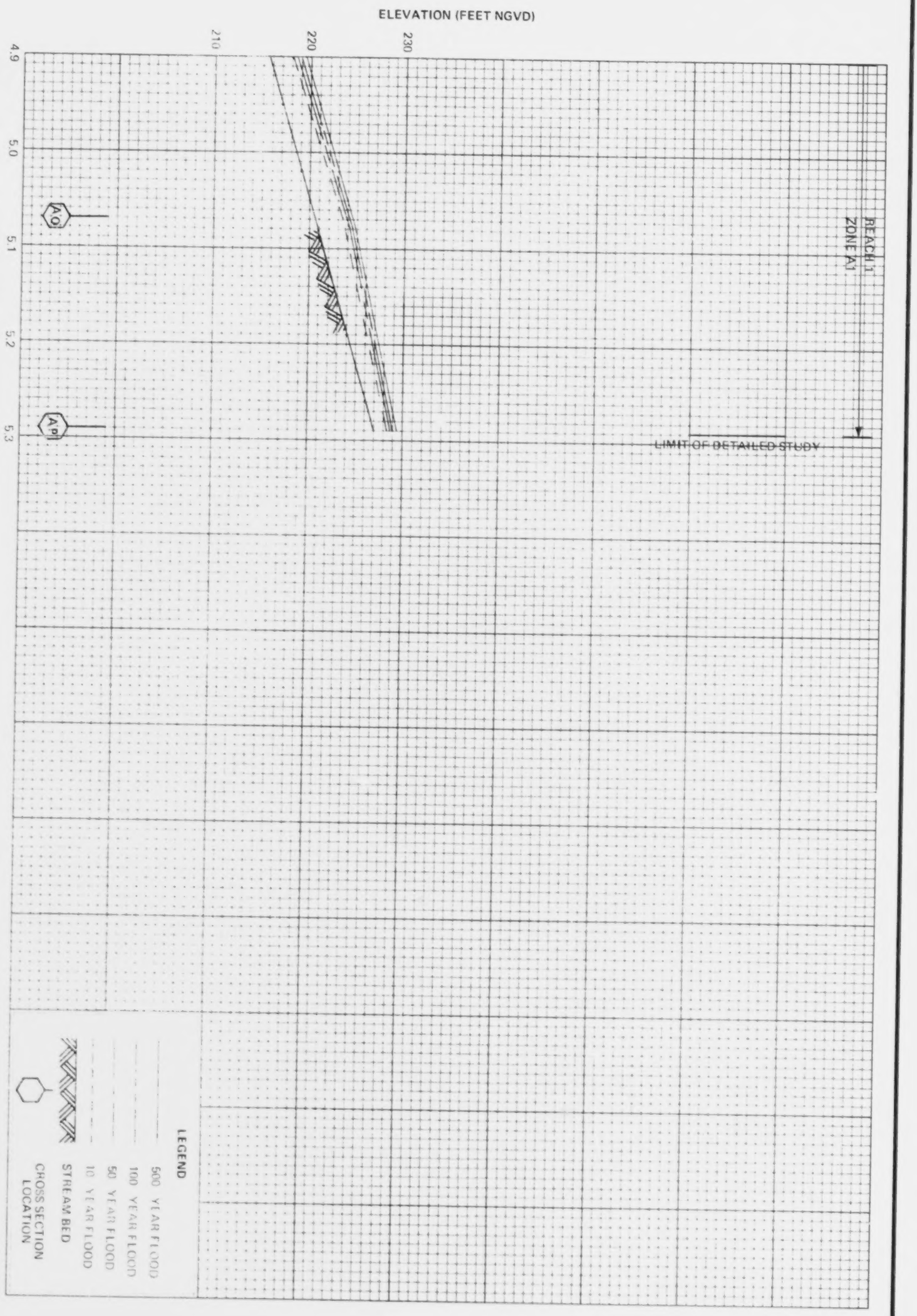
MILL CREEK



52P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES MILL CREEK



53P	FEDERAL EMERGENCY MANAGEMENT AGENCY CLARK COUNTY, WA (UNINCORPORATED AREAS)	FLOOD PROFILES MILL CREEK



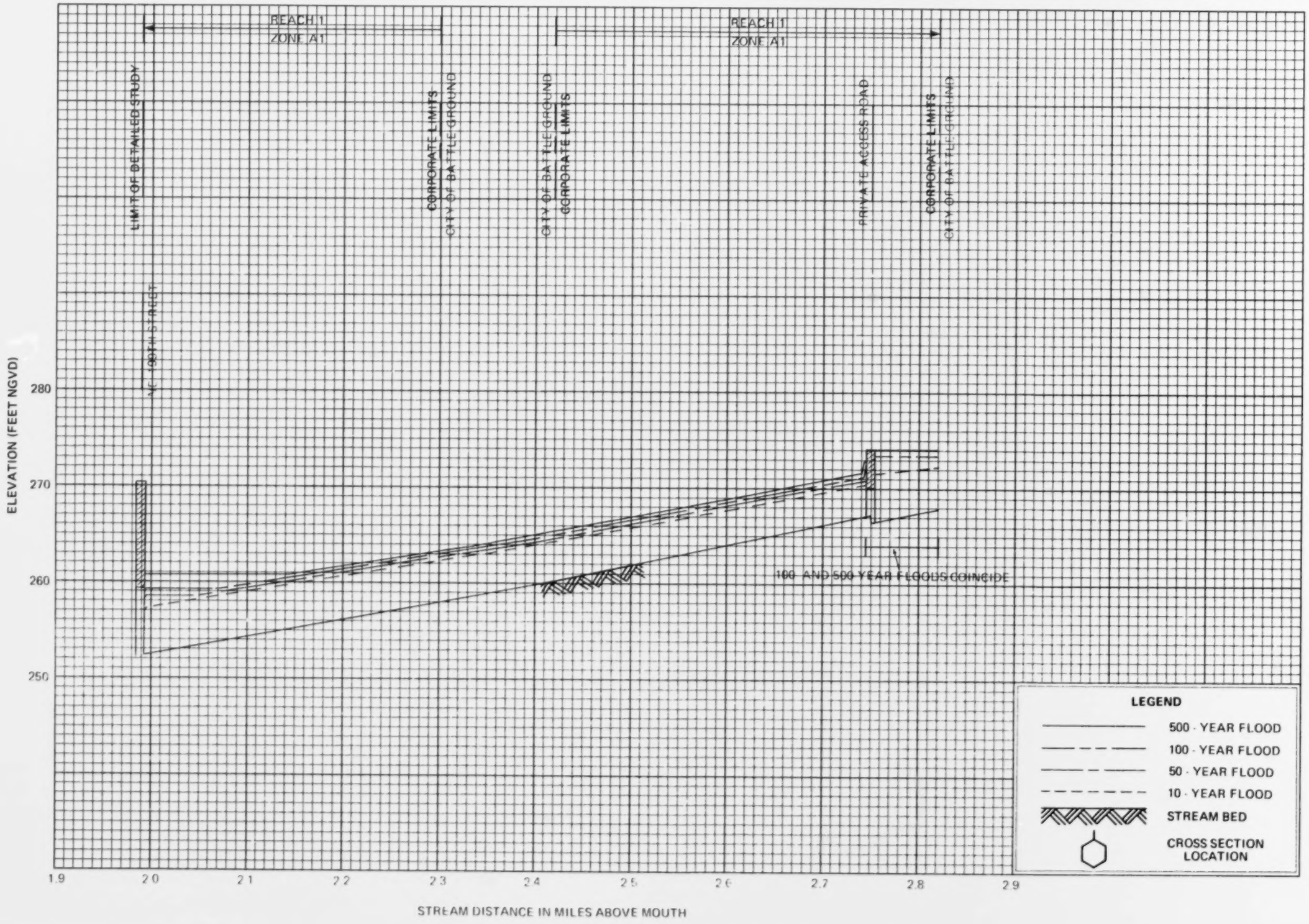
54P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

MILL CREEK



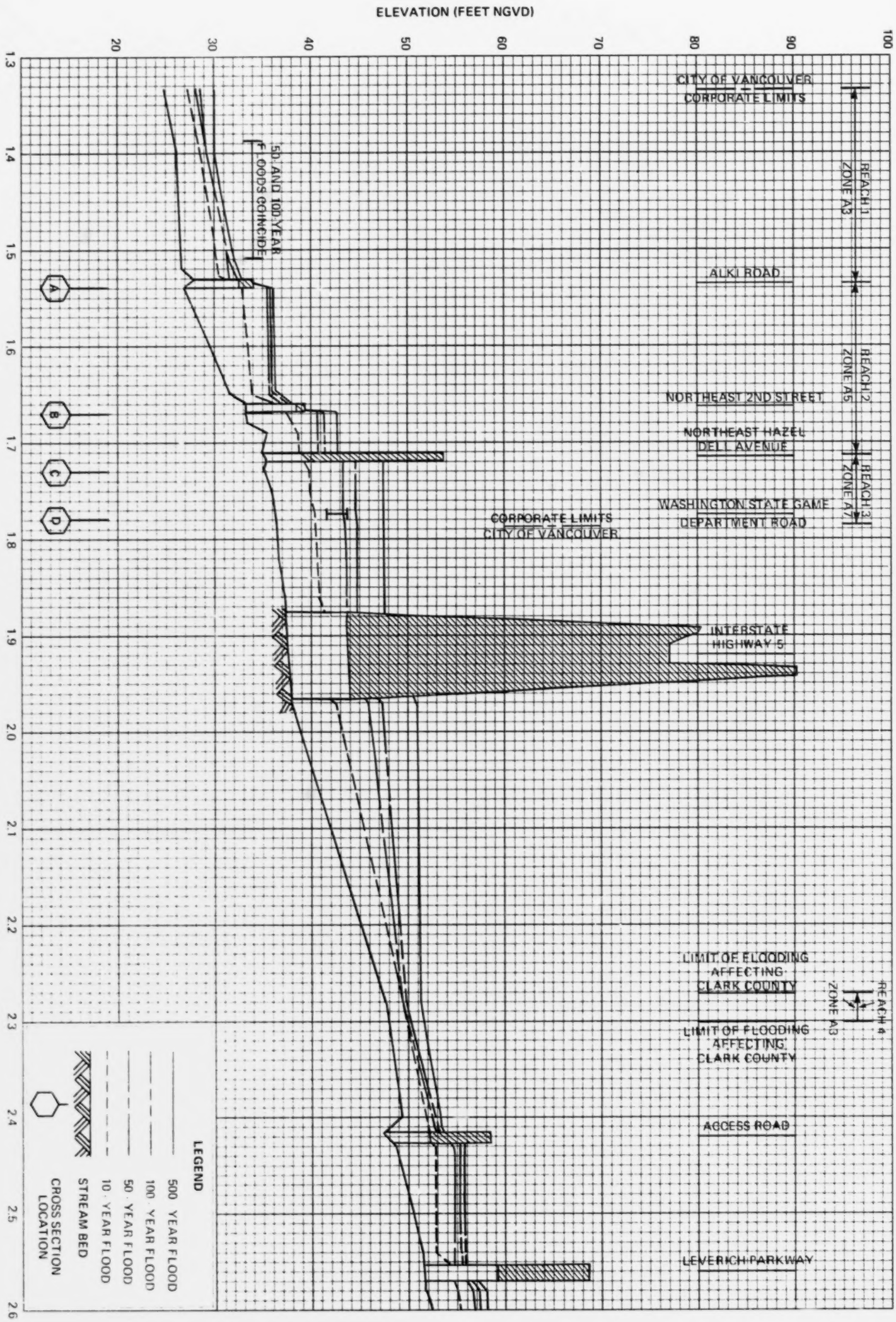
FLOOD PROFILES

WEAVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

55P



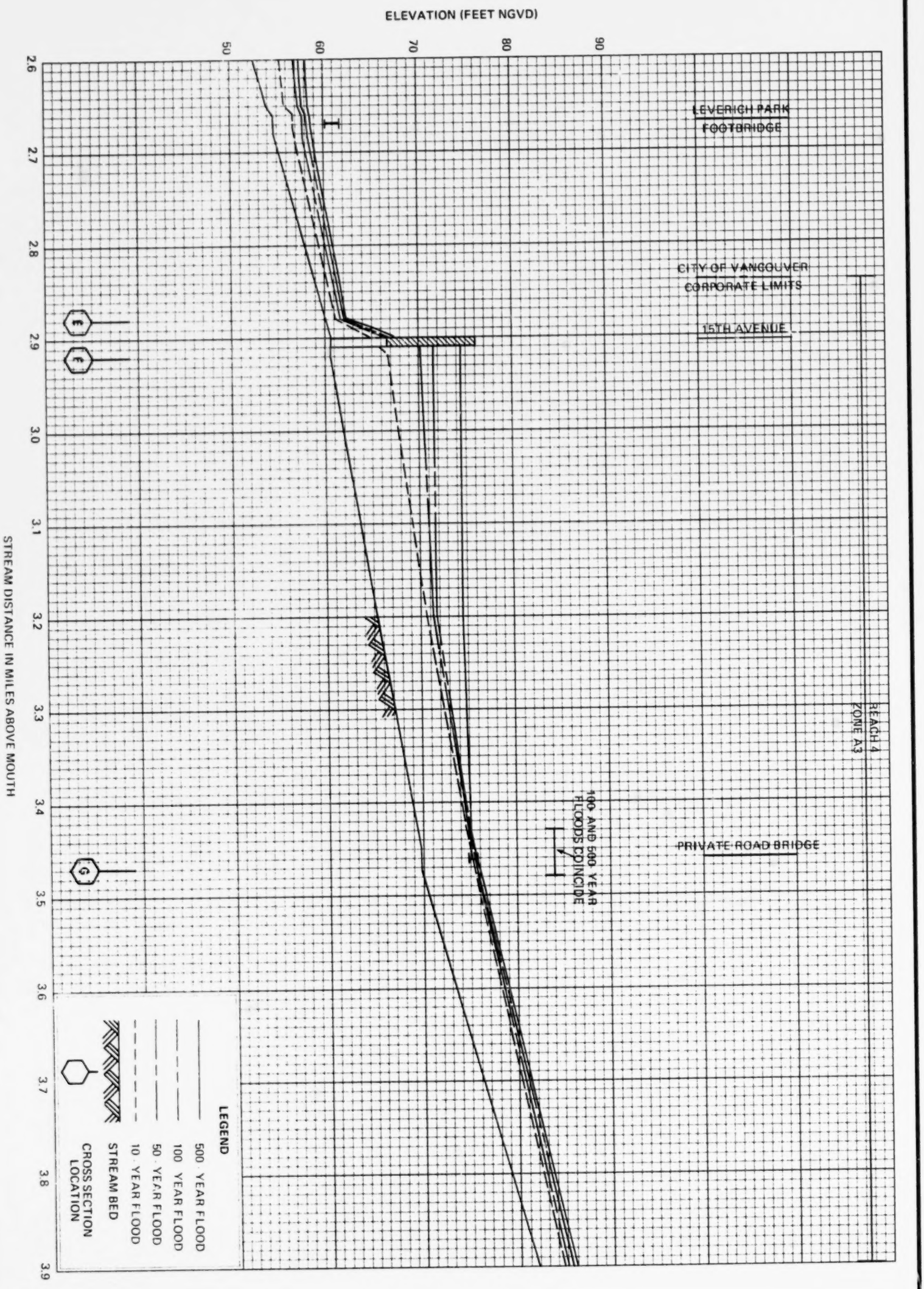
56P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

BURNT BRIDGE CREEK



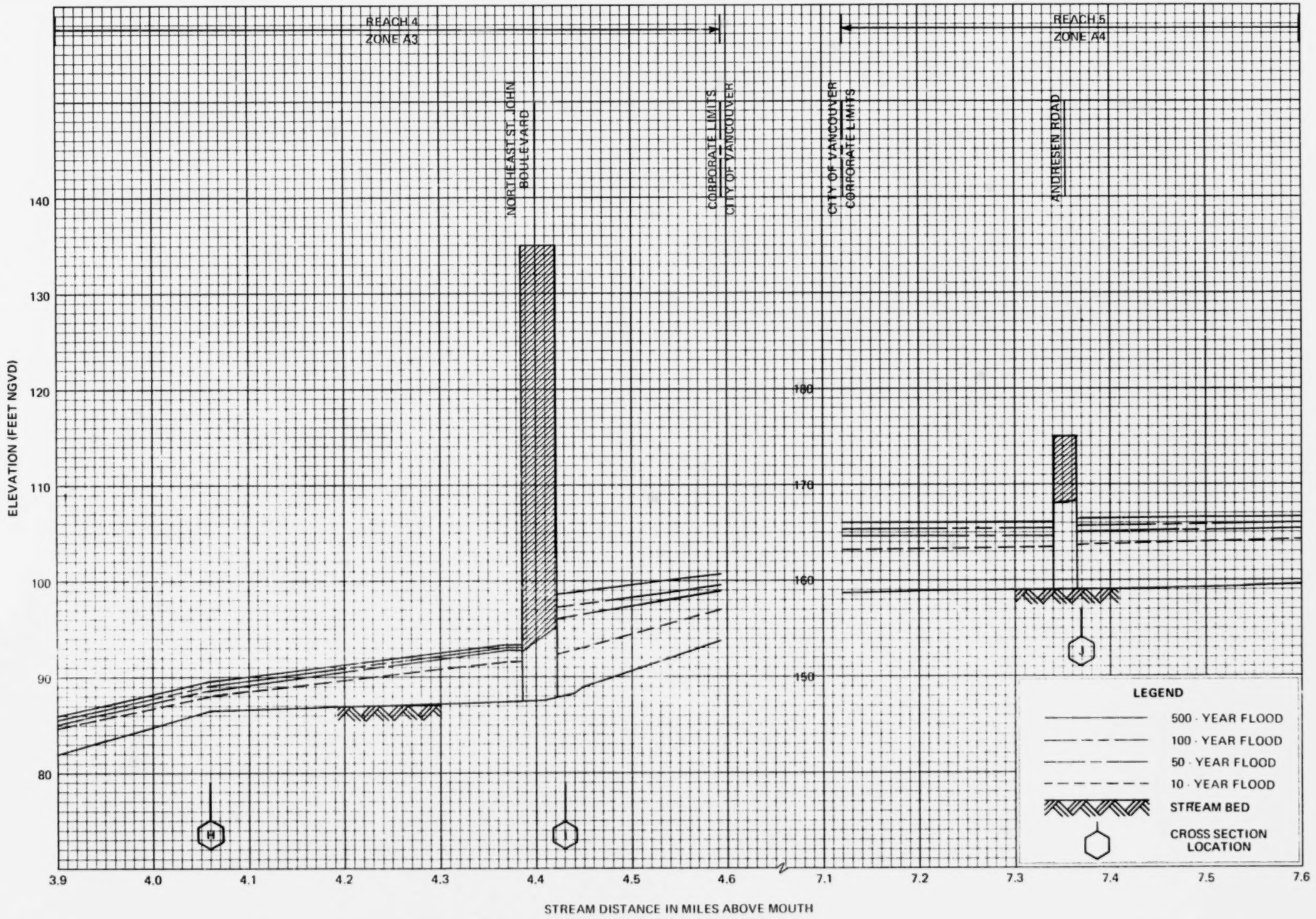
57P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

BURNT BRIDGE CREEK



FLOOD PROFILES

BURNT BRIDGE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

REACH 5
ZONE A4

REACH 6
ZONE A1

NORTHEAST BURTON ROAD

OAK DRIVE

50 AND 100 YEAR FLOODS COINCIDE

50 AND 100 YEAR FLOODS COINCIDE

ELEVATION (FEET NGVD)

180
170
160
150

7.6 7.7 7.8 7.9 8.0 8.1 8.2 8.3 8.4 8.5 8.6 8.7 8.8 8.9

STREAM DISTANCE IN MILES ABOVE MOUTH

K L M

LEGEND

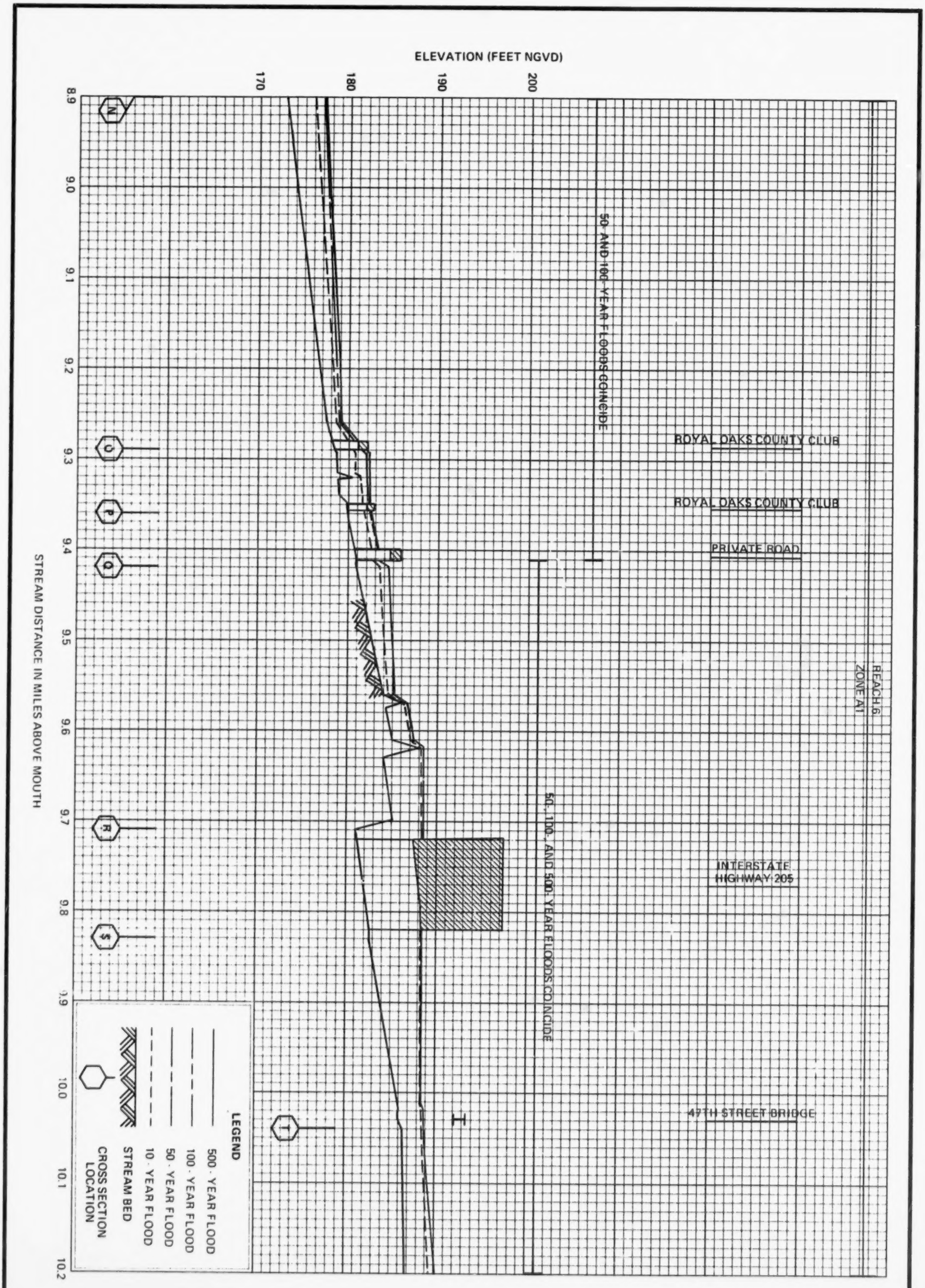
- 500 - YEAR FLOOD
- 100 - YEAR FLOOD
- 50 - YEAR FLOOD
- 10 - YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

BURNT BRIDGE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)



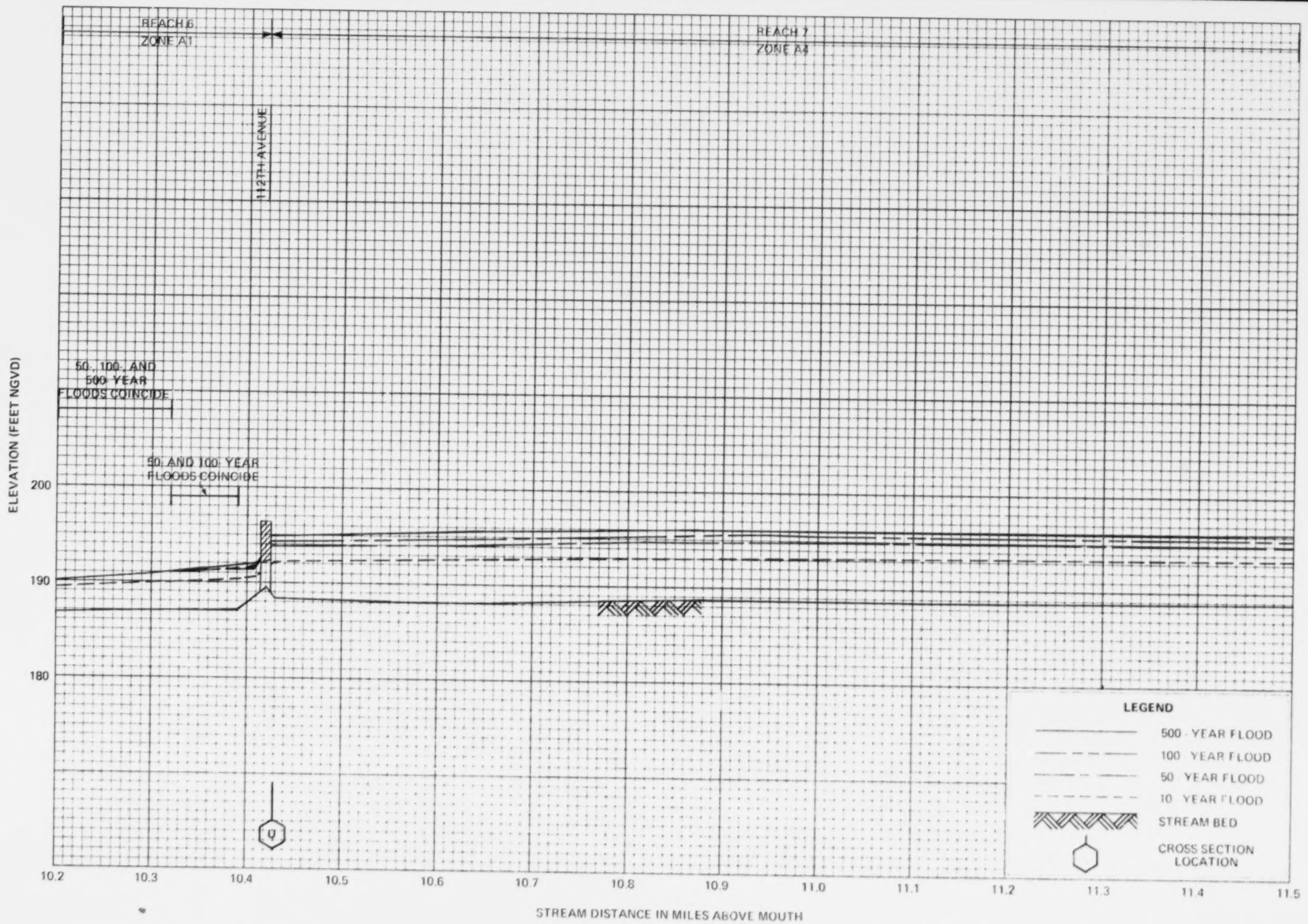
60P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

BURNT BRIDGE CREEK



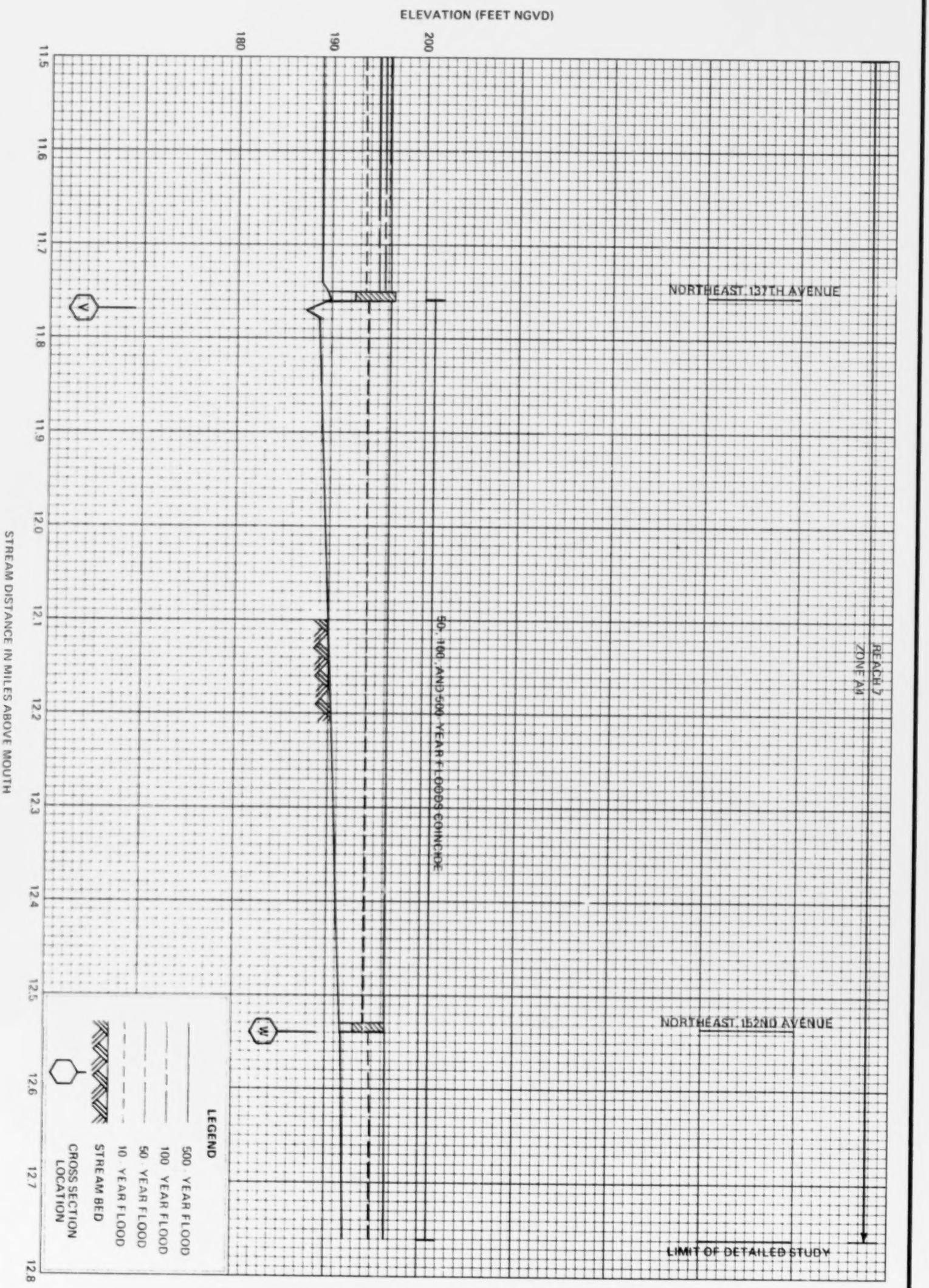
FLOOD PROFILES

BURNT BRIDGE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

61P

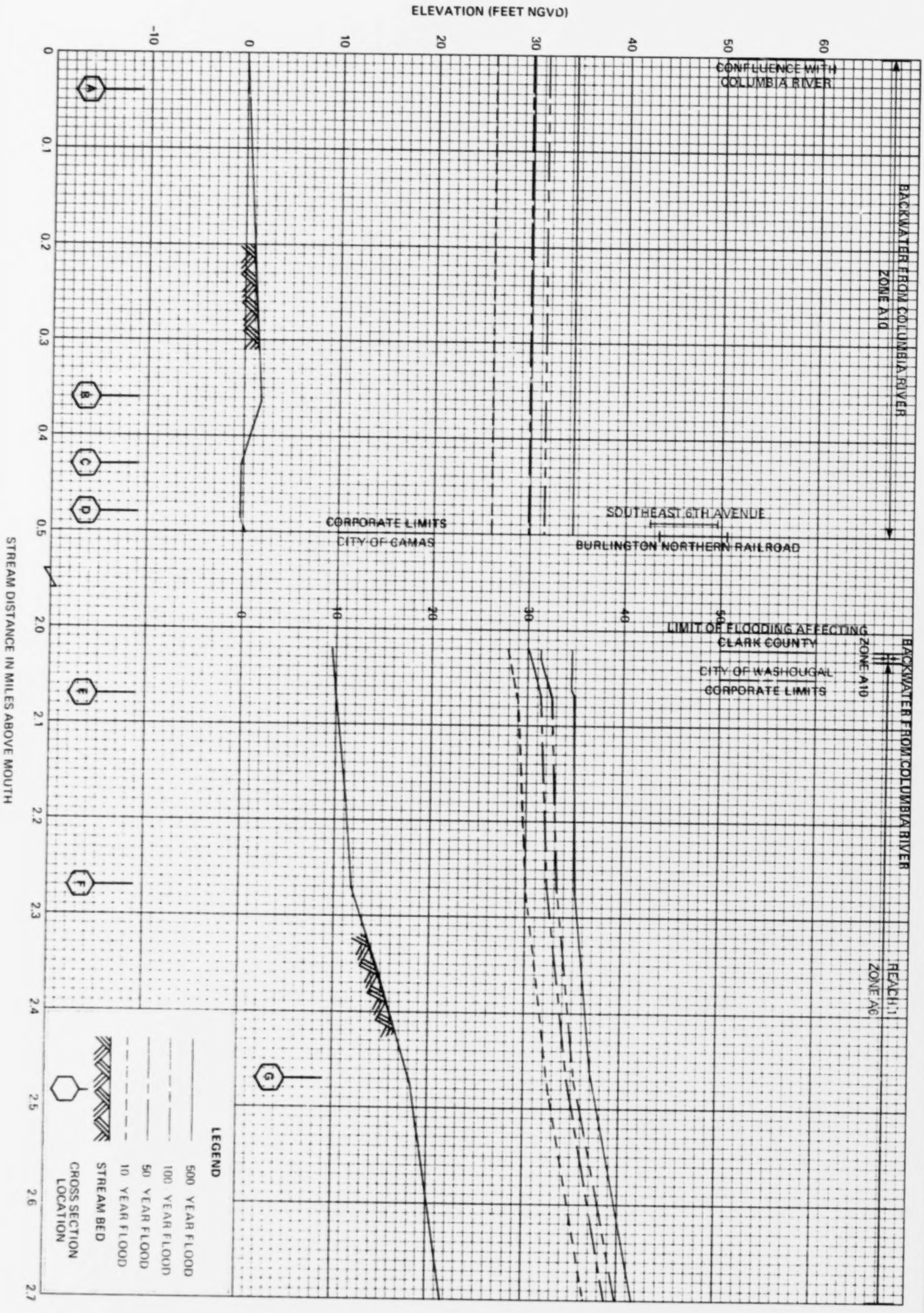


FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

BURNT BRIDGE CREEK



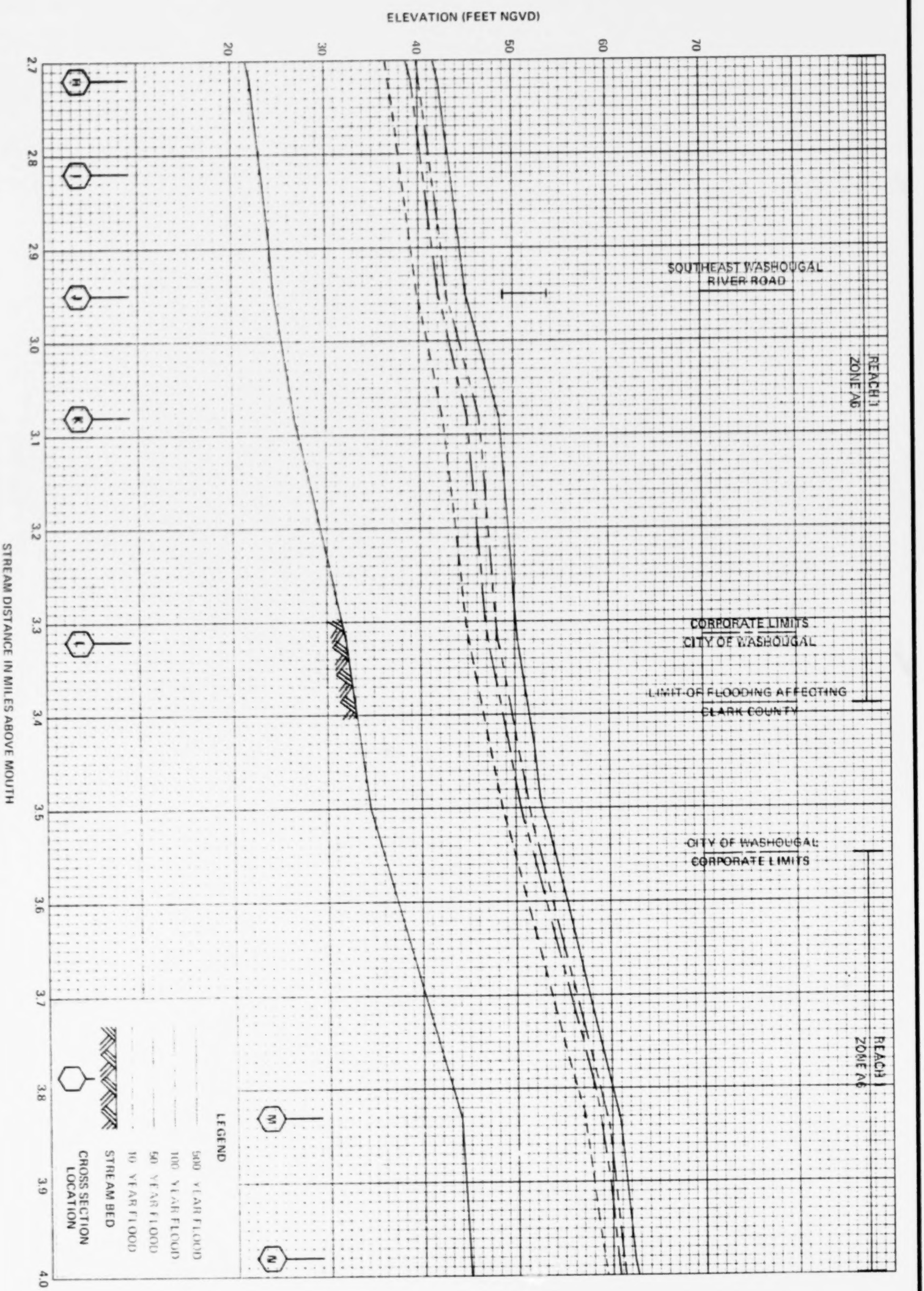
63P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

WASHOUGAL RIVER



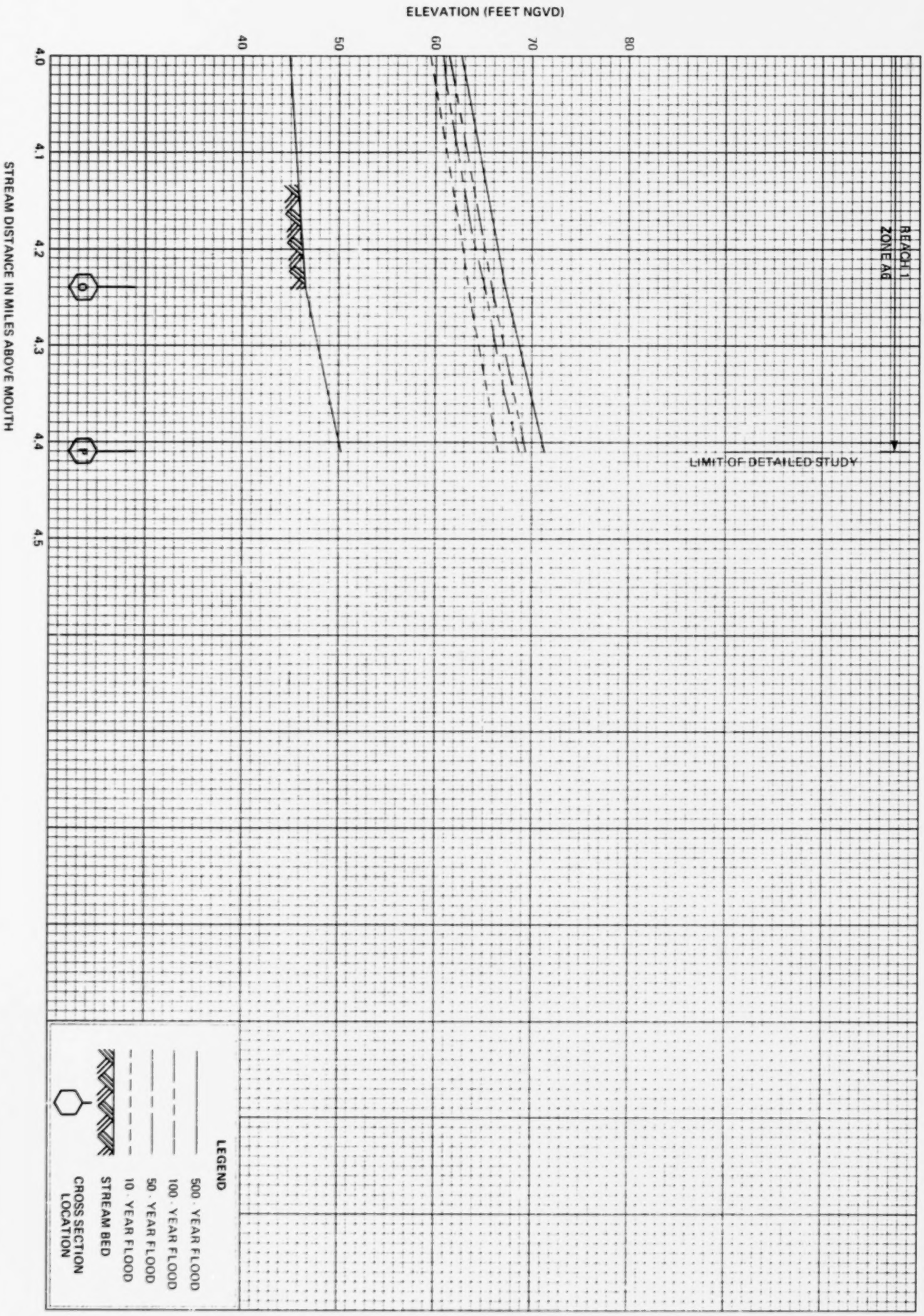
64P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

WASHOUGAL RIVER



65P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CLARK COUNTY, WA
(UNINCORPORATED AREAS)

FLOOD PROFILES

WASHOUGAL RIVER